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13. ABSTRACT (Maximum 200 words)

This study looked at a comparison of access in the McDonald Army Community Hospital (MACH) Urgent Care Center (UCC) before and after the implementation of a Re-engineering Initiative. The purpose was to implement and examine a re-engineering process to increase access for beneficiaries enrolled in TRICARE Prime, better utilize primary care providers and resources, and reduce overall costs of providing primary care.

The Re-engineering Initiative used a process action team to develop a course of action that would best conform to the overall goals of the organization and the purpose of the Initiative. The courses of action were briefed to the hospital's Executive Committee, where the decision was made to operate the UCC at night, Sundays and major holidays. Additionally, the clinic would be available for the treatment of patients, as an extension of the General Outpatient Clinic (GOPC), during the day and on Saturdays. Raw data was collected from the Composite Health Care System for the period of one year, exported into spreadsheet and database programs and thoroughly analyzed. The Re-engineering Initiative plan of action was then developed based on the data analysis and expertise of the health care providers and ancillary staff. The plan was implemented April 1st, 1999.

Overall, the enrolled population of MACH reduced UCC utilization by 352 visits or 34.3 percent over the mean of the year studied. Additionally, the number of non-urgent patients was reduced by 746 visits or 48.3 percent.

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**U.S. Army – Baylor University
Graduate Program in Health Care Administration**

**A Comparison of Urgent Care Center Access
For TRICARE Prime Enrollees
Before and After Implementation of a Re-engineering Initiative**

**A Graduate Management Project
Submitted to:**

**Dr. A. David Mangelsdorff
Professor, U.S. Army – Baylor University
Graduate Program in Health Care Administration**

14 June 1999

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Abstract

This study looked at a comparison of access in the McDonald Army Community Hospital (MACH) Urgent Care Center (UCC) before and after the implementation of a Re-engineering Initiative. The purpose was to implement and examine a re-engineering process to increase access for beneficiaries enrolled in TRICARE Prime, better utilize primary care providers and resources, and reduce overall costs of providing primary care.

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Table of Contents

Acknowledgements.....	ii
Abstract.....	iii
List of Tables	v
List of Figures.....	vi
Introduction	1
Conditions Which Prompted the Study	3
Original System.....	5
Problem Statement	11
Literature Review	11
Purpose	18
Methods and Procedures.....	19
Process Action Team.....	20
Data Collection.....	23
The Re-engineering Initiative	24
Results.....	31
Discussion.....	40
Conclusion and Recommendations.....	50
Appendices	
Appendix A: Catchment Area	52
Appendix B1 – B2: UCC Floor Plans.....	53 - 54
Appendix C1 – C2: GOPC Floor Plans.....	55 - 56
Appendix D1 – D3: UCC Demographics	57 - 59
Appendix E1 – E3: Hourly Patient Flow Statistics.....	60 - 62
Appendix F1 – F16: Patient Flow Graphs	63 - 78
Appendix G1 – G8: Patient Acuity Charts	79 - 86
References	87

List of Tables

Table 1 UCC Hours of Operation	6
Table 2 GOPC Hours of Operation	8
Table 3 Re-engineering Initiative UCC/Treatment Area Hours of Operation	25
Table 4 Re-engineering Initiative GOPC Hours of Operation	30

List of Figures

All figures for this study are located in the appendices. The size and content of the figures did not allow them to be placed within the context of the paper. Please refer to the table of contents for the appendix listing.

Introduction

Patient satisfaction is of paramount importance to the staff and health care providers at McDonald Army Community Hospital (MACH). The implementation of TRICARE has led to significant changes in the way health care is delivered to eligible beneficiaries. One of the primary concerns that both TRICARE beneficiaries and program administrators have of TRICARE, is access to the quality health care patients are entitled to receive.

TRICARE is the name of the Defense Department's regional managed health care program for service families (TRICARE Standard Handbook, 1997). TRICARE Prime is a voluntary Health Maintenance Organization-type (HMO) option that has an enrollment period for one year, and requires an annual enrollment fee (except for active duty family members, who may enroll free). The majority of the beneficiaries' health care is received from within the Prime network of civilian and military providers, and a Primary Care Manager (PCM) is assigned from within the contractors' network or the nearest military Medical Treatment Facility (MTF) (TRICARE Standard Handbook, 1997). The enrollment site at Fort Eustis is called MACH Prime 1 and consists of two TRICARE Prime clinics; the General Outpatient Clinic (GOPC), which is the primary care clinic for all patients 14 years and older and the Pediatric Clinic which cares for all patients under age 14. Although these clinics are separate, they are not separate enrollment sites and are both considered part of MACH Prime 1. There is an additional enrollment site at MACH called "TRICARE Prime Fort Eustis," (TP FT E) which is contracted to Sentara Health Systems. It offers the same benefits and services as MACH Prime 1, but is managed by administrators from Sentara.

TRICARE Extra and TRICARE Standard have no annual enrollment fees but require an annual deductible before government cost sharing begins. TRICARE Extra gives the

beneficiary a discount on services and reduced cost-shares if the provider is part of the TRICARE Extra network. TRICARE Standard gives the beneficiary the greatest amount of freedom to choose providers, but incurs greater costs than TRICARE Extra. A beneficiary covered under TRICARE Extra and Standard may seek health care at a military MTF, but only on a space-available basis.

MACH Prime 1, to include the GOPC and the Pediatric Clinic, is designed to provide enrolled patients (TRICARE Prime) with all of their primary care needs. Specialty care, if necessary, is obtained by referral from the patient's PCM. To access the system, the beneficiary need simply to call or visit a TRICARE Service Center (TSC) and schedule an appointment. The concern lies in the fact there may not be an appointment available, or an appointment may be available at a time when the patient simply cannot present.

MACH operates an Urgent Care Center (UCC), in lieu of an emergency room, which is an integral part of the health care delivery process and is accessed frequently by beneficiaries, both enrolled and non-enrolled. Far too often, however, patients use the UCC as a clinic of convenience rather than of necessity. This may be due to the patient simply not wanting to be enrolled in TRICARE Prime, or not being eligible for Prime, in the case of eligible beneficiaries over the age of 65. These beneficiaries must access their primary care on a space-available basis. Other reasons for UCC utilization include not being able to schedule an appointment in an acceptable amount of time, or not being able to utilize the outpatient or pediatric clinic due to work, school or other unavoidable conflicts. As a result, many beneficiaries in the catchment area (40-mile radius around a MTF) of MACH use the UCC as their primary method of accessing the military health care system. This is not only a poor use of resources, but also an inefficient use of health care providers.

Beneficiaries in the TRICARE system have a choice of where they receive their health care, especially in the Tidewater area of Virginia. Along with Fort Eustis, TRICARE Prime enrollment sites located at Portsmouth Naval Medical Center, Langley AFB, and Fort Monroe are all within close proximity of each other (Appendix A). As a result of beneficiaries having a choice, MTFs must be more proactive in not only initially enrolling beneficiaries in TRICARE Prime, but maintaining their satisfaction to a level of where the beneficiaries will re-enroll at that specific MTF when their annual enrollment period is over. According to Hope Pickering, Director of Marketing at MACH, "Inability to access health care is one of the major concerns that beneficiaries have with TRICARE." With that in mind, it is imperative that patients who are enrolled in a specific MTF have access to the care that they are entitled to receive. Failure to do so will lead to a decrease in overall patient satisfaction and ultimately affect enrollment and management of resources.

Conditions Which Prompted the Study

Overutilization of medical services for minor or self-limiting illnesses is a substantial problem at many military bases. Managing the demand for health care is a significant concern in light of the growing federal budget deficit and the resulting moves to cut military spending. Currently, the Pentagon spends about \$15 billion annually on health care (Glavan Haynes, Jones, and Philput, 1998). North Atlantic Regional Medical Command (NARMC), which is the higher headquarters of MACH, has specifically tasked the MTFs under their command to look at ways of reducing costs of providing health services while still maintaining the quality of care that beneficiaries deserve. One area that NARMC has specifically addressed as an area of cost savings is the UCC. In a comparison of cost per visit between the UCC and the GOPC, data was gathered for a seven-month period from October

1997 through April 1998. According to CPT(P) Timothy Napora, Chief of Resource Management Division at MACH, "the cost per UCC visit was \$171.59 versus \$70.62 for the GOPC." CPT(P) Napora, using the Medical Expense Performance Reporting System (MEPRS), computed the actual cost per visit for the UCC and the GOPC. The MEPRS is a cost accounting system that factors in four distinct categories to account for the cost of each patient visit. The four areas are: 1) Direct expenses, which comprises military and civilian compensation (salaries and benefits) and contracted health care costs; 2) Expenses from ancillary support areas such as pharmacy, radiology, and lab which are directly related to health care; 3) Expenses from administrative support areas such as housekeeping, logistics, resource management, and patient administration which are those areas that are not directly tied to providing health care, but must be accounted for in the actual cost of a patient visit and; 4) Expenses from cost pools. Costs pools are a method to account for direct or indirect operating expenses when work centers share physical space, personnel, and/or supplies; such as the UCC and GOPC sharing supplies from the same supply closet (Assistant Secretary of Defense for Health Affairs, 1995).

The UCC at MACH operates 24 hours per day, seven days per week and provides limited emergency care to all eligible beneficiaries, both TRICARE Prime as well as non-enrolled patients. The problem lies in that many of the patients that access the UCC are not urgent, but are seeking health care because they know that they will have to be seen on a space-available basis and cannot be turned away. Additionally, many of these patients are not enrolled in TRICARE Prime, either because they do not want to pay the enrollment fee, or there are no vacancies for them to be enrolled at a MTF. Because of the 24-hour availability of the UCC, patients can present symptoms (either urgent or not) whenever they perceive the

need for health care. This leads to the UCC being inundated at times, while at other times there may be very few patients that await care. This current system does not utilize physicians, ancillary staff and resources to their maximum efficiency. With the intent of TRICARE Prime being to provide primary care, under a PCM, having the UCC open 24 hours is more of a convenience than a necessity to beneficiaries. The current system does not facilitate this intent. A re-engineering of how the UCC and GOPC function at MACH will provide greater access to primary care managers, utilize health care providers more efficiently, reduce operating costs, and still provide quality health care services for all eligible beneficiaries.

Original System

The following clinics or ancillary support areas may be affected by any change in the current method of delivering health care at MACH. As a result, their current means of conducting day to day operations are given to establish a baseline to be compared with when the re-engineering plan is implemented.

Currently, MACH operates a 24-hour per day, seven-day per week Urgent Care Center (Appendix B1) utilizing a combination of eight and twelve hour shifts (Table 1). The eight-hour shifts are from 0700 – 1500, 1500 – 2300, and 2300 – 0700. Additionally, there is an eight-hour shift from 1300 – 2100 that accommodates the higher flow of patients that present during this time. The twelve-hour shifts are from 0700 – 1900 and 1900 – 0700. Hospital staff physicians, both military and Government Service (GS), staff the UCC from 0700 Monday through 2300 Friday working eight-hour shifts, with one physician covering each shift. Saturday, Sunday and holiday shifts are staffed with contracted physicians through an organization called EMSA, which costs the hospital approximately \$105.00 per hour. These

weekend and holiday shifts are staggered with one physician on staff for each shift, which are from 0700 – 1900, 1300 – 2100, and 1900 to 0700. Hospital staff physicians resume their schedule at 0700 the following regularly scheduled workday.

MONDAY Through FRIDAY						
	8-Hour Shifts				12-Hour Shifts	
	0700-1500	1500-2300	2300-0700	1300-2100	0700-1900	1900-0700
Physicians	1	1	1	1		
Nurses	2	2	1			
91Bs	3				2	3
EMT Section	3	2	1			
Receptionists	1	1				
SATURDAYS, SUNDAYS and HOLIDAYS						
	8-Hour Shifts				12-Hour Shifts	
	0700-1500	1500-2300	2300-0700	1300-2100	0700-1900	1900-0700
Physicians				1	1	1
Nurses	2	2	1			
91Bs	3				2	3
EMT Section	2	2	1			
Receptionists						

Table 1 – UCC Hours of Operation

The nurses staff the UCC in the same eight-hour shifts as the hospital-employed physicians. There are a total of nine registered nurses (RNs) of which, three are military and six are GS. Additionally, there is one GS Licensed Practical Nurse (LPN). From 0700 – 1500 there are two nurses, either military or civilian with one being the head nurse (RN). From 1500 – 2300 there are also two nurses (RN or LPN), one of which must be a RN, and from 2300 - 0700 there is one RN. Weekends and holidays are staffed the same as normal duty hours.

Military medical specialists or 91Bs currently staff the UCC in staggered shifts. 91Bs are soldiers trained in basic Emergency Medical Technician (EMT) skills and can function in a wide variety of positions. During the 0700 – 1500 shift, three (including the Noncommissioned Officer-in-Charge - NCOIC) are on duty with responsibilities that include

check-in, triage, vital signs, and ambulance driver/EMT assistant. There are currently no 91Bs that work the second or third eight-hour shift. Two 91Bs staff the 0700 – 1900 shift, and three staff the 1900 – 0700 shift with one serving in a receptionist capacity. Weekends and holidays are staffed the same as normal duty hours. To allow soldiers to be better managed, a change occurred on December 1st, 1999 where all 91Bs will be scheduled in eight-hour shifts.

The ambulance section consists entirely of civilian employees (EMTs) that work eight-hour shifts. The overall section has the mission to respond to all Ft. Eustis emergencies and conduct all hospital transfers. During the 0700 – 1500 shift, three personnel (including the supervisor) are on duty with responsibilities that include check-in, triage, vital signs, and en route care on ambulance runs. From 1500 – 2300 the UCC is staffed with two EMTs, with one from 2300 – 0700. On Saturdays, Sundays, and holidays the UCC is staffed the same as Monday through Friday duty hours with the exception of two EMTs on duty from 0700 – 1500 rather than three.

Two receptionists staff the UCC Monday through Friday; one from 0700 – 1500 and the other from 1500 – 2300. Their duties include various administrative functions and patient customer service. The on-duty 91Bs or nurses perform weekend receptionist duties, in addition to their specific provider responsibilities.

The General Outpatient Clinic (Appendix C1) operates Monday through Friday 0630 – 2000 and Saturday's from 0800 – 1700. Military sick call is held from 0630 – 0800 with appointments for eligible beneficiaries beginning at 0730 (Table 2). The GOPC is staffed with ten GS health care providers (seven physicians and three PAs), and a military department chief. The optimal staffing plan calls for nine of those providers to work from 0700 – 1600

and one provider to work from 1100 – 2000. These numbers are normally less than optimal due to vacations, illness, and continuing medical education.

	MONDAY Through FRIDAY				SATURDAY
	8-Hour Shifts				9-Hour Shift
	0630-1530	0700-1600	0730-1630	1100-2000	0800-1700
Physicians		9		1	2*
Nurses		1			
91Bs	4			1	2**
Secretary	1				
Receptionists			1		
	*Includes one Pediatrician				
	**One serves in the capacity of the receptionist				

Table 2 – GOPC Hours of Operation

The GOPC is staffed with a civilian RN serving as head nurse who works 0630 – 1630 Monday through Friday, and five 91Bs who work on staggered shifts. Four 91Bs work from 0630 – 1530 and one from 1100 – 2000 with the mission of screening patients, data entry, treatment, follow-up appointment booking and cleaning not included in housekeeping responsibilities. The GOPC has one secretary, who works 0630 – 1530, and one receptionist (works in physical exams section) who works from 0730 – 1630. On weekends and holidays there is one 91B who conducts screening of patients and another 91B serves in the capacity of a receptionist, which is currently a vacant position.

The Pediatric Clinic operates from 0730 – 1630 Monday through Friday and is responsible for seeing patients from birth through age 13. There are four pediatricians (two GS and two military) and a nurse practitioner (NP) that staff the Clinic during normal operating hours; however, one pediatrician begins the retirement process on December 1st (a replacement is scheduled to be hired). Additionally, one of the pediatricians is the department chief and because of administrative duties can only provide a .5 Full-Time Equivalent (FTE). A FTE is the amount of labor available to a MTF work center that would be available if one

person had worked for one month in that work center. The conversion factor is: total actual hours worked divided by 168 equals one FTE (Assistant Secretary of Defense for Health Affairs, October 1995). The clinic also operates on Saturdays with a pediatrician performing duties (approximately one day per month) in the GOPC. During normal duty hours, the support staff for the Pediatric Clinic includes a civilian RN who serves as head nurse, a 91C NCOIC, a LPN, a 91B, and a medical clerk. A 91C is the civilian equivalent of a licensed practical nurse. On Saturdays, the 91B and 91C are part of a hospital-wide rotation system and are scheduled to work in the GOPC according to the rotation schedule.

The Outpatient Pharmacy operates Monday through Friday from 0700 – 1800 hours for active duty personnel and from 0800 – 1800 for all other eligible beneficiaries. After 1800, two medical carts (one for the GOPC and one for the UCC) are provided that carry the most commonly used medications (based on input from providers). They are prepackaged, have all the necessary labeling, and require only the physician to write in the patient's name. The physician then writes a prescription for the medications, which is placed into the patient's medical records the following day. On Saturdays, the Pharmacy operates from 0800 – 1200 and handles both outpatient and inpatient requirements. After 1200 on Saturdays, the Pharmacy provides the medical carts that follow the same Monday through Friday procedures. There are no outpatient pharmacy operations on Sundays or major holidays. The Pharmacy is staffed with 14 personnel, which includes four pharmacists, six military pharmacy technicians and two civilian pharmacy technicians. Additionally, two contracted pharmacy technicians operate a satellite refill pharmacy from 0900 – 1800 Monday through Friday. This facility is located separate from MACH and allows beneficiaries to refill prescriptions in a convenient manner. One pharmacy technician is on call for any situations requiring pharmacy support,

such as in-patient medications not available on the medical cart or resupply of medications on the crash cart.

The Laboratory operates normal duty hours from 0730 – 1600 Monday through Friday and provides MACH with all routine lab work to include “STAT” tests in one hour or less and “ASAP” tests in four hours or less. Additionally, during normal duty hours, the Lab draws all the blood for the GOPC (UCC and Internal Medicine draw their own blood). From 1600 – 0730, the lab is staffed with one military technician who is responsible for supporting the UCC, GOPC, and inpatients with “STAT” and “ASAP” tests. During this time frame, the UCC draws blood for their patients as well as GOPC patients, while inpatients have their blood drawn by the internal medicine staff. The blood is then taken to the Lab for the appropriate test. On Saturdays, Sundays, and specific holidays, the Lab operates two twelve-hour shifts (0730 – 1930 and 1930 – 0730), staffed with military Lab technicians who provide the same services as the Lab does from 1600 – 0700 Monday through Friday.

The Radiology Department consists of two radiologists, one military department chief and one contracted civilian, three GS-7 and three military radiology technicians, two ultrasound technicians, two mammography technicians, and a darkroom technician. Rounding out the staff is a receptionist and a transcriptionist. The department operates Monday through Friday, 0730 – 1630 and provides all x-ray, ultrasound, and mammography services for the hospital, to include the UCC, GOPC and Internal Medicine. A second (1530 – 2330) and third (2330 – 0730) shift is staffed with one military technician who has x-ray responsibilities for the UCC and emergent GOPC patients only. On weekends, the department has one technician that remains on site from 0730 Saturday through 0730 Monday with a designated on call technician to handle any emergencies or high volume requests.

Problem Statement

MACH must provide greater access to primary care for their MACH Prime 1 enrollees while maintaining quality care and reducing the operating costs of the UCC. Enrollment in MACH Prime 1 is near capacity; and a lack of GOPC and pediatric appointments for enrollees and other eligible beneficiaries results in the UCC becoming a common method for access to primary care. The UCC is an inefficient means of providing primary care at MACH and with an estimated 87 percent of the patients presenting with non-urgent symptoms, it is clear that the UCC is a clinic of convenience for the majority of eligible beneficiaries. This coupled with the inefficient use of UCC providers and resources results in a system that needs repair.

Literature Review

In review of available literature, no studies were found specifically related to the effect on access as a result of a UCC or emergency room re-engineering initiative. A great deal of literature, however, is available on patient acuity and access to emergency services. Emergency services for this study include both emergency room and UCC services.

Use of these emergency services has increased dramatically. Although emergency departments (EDs) exist primarily to treat patients with life threatening illnesses and injuries, they also serve many patients with less serious conditions. Clark (1996) states that in 1993, there were 97.4 million visits to emergency rooms in the U.S., up from 65.9 million in 1973. A significant portion—estimates range from 30-55 percent—probably could have been handled less expensively in doctors' offices and clinics. Since ED visits generate higher charges than comparable visits to physicians, "inappropriate" use of the ED has been cited as an important contributor to the increasing cost of health care (Young, Wagner, Kellerman, Ellis and Bouley, 1996). Some analysts say emergency care costs two-to-three times as much

as the same care elsewhere, burdening hospitals and health insurance plans with an estimated five billion in unnecessary expenses (Clark, 1996). Supporting his claim is a 1994 article published in *Health Affairs*, which estimated the cost of the "unnecessary" visits to the emergency department to exceed five billion dollars annually (Baker and Baker, 1994). An unnecessary visit is a visit for symptoms that are self-limiting in nature; with time, these symptoms disappear (Glavan et al., 1998). A 1993 U.S. General Accounting Office (GAO) report estimated that 43 percent of visits to the emergency department were "unnecessary" (Warren and Isikoff, 1993). Routine use of an emergency department has been criticized because of its role in increasing health care costs, increasing the likelihood of preventable hospitalizations, and promoting poor overall quality of care resulting from a lack of care continuity (Halfon, Newacheck, Wood, and St. Peter, 1996).

It is very difficult to exactly define what constitutes an emergency simply because one beneficiary's perception of what is an emergent or urgent condition can be significantly different from that of another. In his July 27th, 1995 testimony prepared for the House Ways and Means Health Subcommittee and Commerce Health and Environment Subcommittee, Richard V. Aghababian, then-President of The American College of Emergency Physicians (ACEP) stated: "According to the Centers for Disease Control, the number one complaint of people presenting to the emergency department is abdominal pain. That can indicate many different conditions with varying degrees of severity. It could be very serious conditions such as cholecystitis, appendicitis, pancreatitis, ectopic pregnancy, dissection of the aorta, or it could be less serious such as gastroenteritis, a urinary tract infection or constipation. The problem is that on the front end you simply don't know whether it's serious or non-urgent" (Aghababian, 1995). In a study of 1,190 consecutive ambulatory patients presenting to an

urban public hospital emergency department, Baker, Stevens and Brook found that 89 percent of patients believed they require immediate medical care regardless of the duration of their illness or injury. However, according to physician review, only 43 percent required care within 24 hours (Baker, Stevens, and Brook, 1995). Nagurney and Gregg, state "Non-urgent" visits are not a trivial matter: they explain much of the overcrowding and long waits that plague ERs, they can divert attention away from critically ill patients, and they cost more than the same care delivered in other settings (Nagurney and Gregg, 1996). A number of other studies have estimated non-urgent use of the emergency department to range from ten to ninety percent, but there is no consensus in the literature on the definition of "non-urgent" (Williams, 1995).

There are, however, some definitive examples of what constitutes an emergent condition. Uva, in her editorial on emergency care access, paraphrases ACEP's "prudent layperson" definition of an emergency. She says: "Emergency services are those health care services provided to evaluate and treat medical conditions of recent onset and severity that would lead a prudent layperson, possessing an average knowledge of medicine and health, to believe urgent and/or unscheduled medical care is required" (Uva, 1996, p.1632).

The American Medical Association (AMA) developed the Patient Protection Act of 1995. Uva, in her editorial on emergency care access, paraphrases the AMA definition of emergency services. She states: emergency services are "those health services that are provided in a hospital emergency facility after the sudden onset of a medical condition that manifests itself by symptoms of sufficient severity, including severe pain, and in the absence of immediate medical attention could reasonably be expected by a prudent layperson, who possesses an average knowledge of health and medicine, to result in 1) placing the patient's

health in serious jeopardy; 2) serious impairment to bodily function; or 3) serious dysfunction of any bodily organ or part" (Uva, 1996, p. 1632).

Tintinalli, in her article on emergency medicine, feels that emergency department triage cannot always identify those who do not require emergency treatment. The purpose of emergency department triage is to determine treatment priority in the emergency department. As currently used, triage is an unreliable predictor of conditions determined to require emergency care and hospital admissions when compared with medical evaluation in the emergency department (Tintinalli, 1996). The Society for Academic Emergency Medicine has recently stated that "patient welfare should be the overriding determinant of access to emergency care" (SAEM Ethics Committee, 1995).

The UCC at MACH triages patients upon arrival and treats patients according to the level of acuity determined during triage. The UCC Standard Operating Procedures (SOP) identify four levels of acuity in the UCC that will serve as the operational definitions for this study. The four levels are: emergent, urgent, semi-urgent and non-urgent. However, it must be noted that for the purpose of this study, urgent and semi-urgent patients are both classified as urgent. The Composite Health Care System (CHCS) does not differentiate between urgent and semi-urgent patients, and therefore, categorizes them both as urgent. The CHCS is an automated, well-organized health services database that provides flexible medical data processing. The CHCS identifies eligible beneficiaries, assigns PCMs, and provides quick access to health care in an effective information management system.

The emergent patient will be seen first no matter when he/she arrives. This patient requires immediate medical attention. Any delay would be harmful and life threatening. This disorder is acute, severe and threatens life or limb. Such patients often require the total

resources of the UCC for several hours. The nursing staff must ensure immediate bed availability, notify the physician of the patient and ensure one on one nursing care until condition stabilizes. The physician must initiate an evaluation of the patient within five minutes or less.

The urgent patient will be seen next even though there may be non-urgent patients who have arrived before him/her. This patient requires medical attention within the next 30 minutes and is in actual or potential danger if not attended. If medical attention is delayed, the patient may develop severe impairment, either transient or permanent, of their general physical condition. The nursing staff must insure immediate bed availability (or keep the patient in the triage area), notify the physician of the patient, and ensure constant monitoring of the patient until their condition stabilizes. The physician must initiate an evaluation of the patient within fifteen minutes or less.

The semi-urgent patients are those that have non life-threatening and do not have the potential for causing severe impairment of the patient's general condition, however, prolonged patient discomfort (physical or mental) or potential impairment of an organ or extremity function may result if not treated properly. These patients are generally seen within the first few hours of arrival. The nursing staff must ensure that the patient can be reassessed at thirty-minute intervals or as needed while awaiting bed assignment. The physician must initiate evaluation of the patient within one hour.

The non-urgent patient generally can be seen in other outpatient facilities, not necessarily a UCC. This medical condition does not necessarily require the services or resources of the UCC. It is not severe or life threatening and delay or referral to non-emergency clinics does not endanger the patient. A health care provider will evaluate non-

urgent patients. There may be prolonged waiting time, as more emergent, urgent and semi-urgent patients arrive. The nursing staff must ensure that the patient can be assessed at two-hour intervals while awaiting bed assignment. The physician must initiate evaluation of the patient as soon as practical after stabilization of emergent, urgent and semi-urgent patients.

The physicians and support staff at MACH urge beneficiaries to present to the UCC if there is any uncertainty in their condition, either perceived or actual. Clark, in his article on emergency medicine, quotes Dr. Art Levin, a specialist in public health and preventive medicine with Prudential Insurance Co. of America. He says, "Most often, it's an issue not of emergent vs. non-emergent but whether the care is appropriate or needed for the condition." "There are always gray areas," Levin continues, citing the example of a man with chest pains who goes to the ER and learns that he has indigestion (Clark, 1996, p. 7). Visiting an emergency department with a non-urgent problem should not be labeled inappropriate if treatment cannot be secured at an alternative location (Young et al., 1996).

There are many factors contributing to why patients and beneficiaries seek care in an emergency room / UCC setting. Convenience, accessibility of PCMs, parental employment, the perception of the severity of the illness, and waiting times all may influence an individuals' choice to seek care in the emergency department (Fisher and Wittlake, 1998). Young et al., conducted a study to characterize the reasons ambulatory patients use hospital emergency departments (EDs) for outpatient care. He states that emergency department use by seriously ill patients, the elderly, and the poor has increased faster than use by the general population (Young et al., 1996). Clark adds other factors, which includes the 41 million Americans who lack health insurance coverage; the elderly's growing use of emergency services; and the increasing prevalence of more serious illness and social problems. Clark, in

his article on emergency medicine quotes Robert Shesser, interim chairman of the Department of Emergency Medicine at George Washington University Medical Center. He says, "patients who are uninsured know that eventually they will be seen at the ER. Many of them are working people. A janitor, for example, doesn't have the liberty to go to a doctor's appointment at an inconvenient time" (Clark, 1996, p. 5). In addition, they can receive relatively prompt attention at night or on a weekend, and they avoid taking time off from work or arranging for child care. Robert L. Norris, head of Stanford University Hospital's emergency department, reiterates these claims in an anonymous *USA TODAY* article stating one of the most common reasons for using an emergency department unnecessarily is a busy schedule and inability to go to a physicians office during business hours ("Where to Seek," 1997).

Two-thirds of a national sample of emergency department directors cited "lack of a primary care provider" and other problems with access to care as major reasons that patients seek care in the emergency department (Young, et al., 1996). This is one of the problems that face the beneficiaries at MACH. Many beneficiaries that present to the UCC do not have a specific primary care manager, and as a result have limited continuity of care. They may see the same provider more than once, but will not have their specific primary care needs met by that provider on a continuous basis. Dr. Art Levin states that the general premise behind managed care is that "care should be coordinated with a primary physician" (Clark, 1996).

Additionally, the study by Young et al. showed that more patients without a regular clinician chose an emergency department because they felt they would receive good care or they would be diagnosed and treated in a prompt manner. "It's important to remember that the emergency department is not a substitute for your family physician or clinic where your

doctor has your medical history, understands your needs and pre-existing conditions and can generally provide care more efficiently at a lower cost. Moreover, if your case is not an emergency, you may have a lengthy wait at the emergency department until the staff has taken care of patients with more pressing problems" ("Where to Seek," 1997, p. 8).

Adults are not the only populations who are using emergency rooms or urgent care centers as a means to access health care. Halfon et al., reports that in 1988, approximately two million U.S. children younger than 18 years were reported to use emergency departments as their usual sources of sick care. Two characteristics of the health care system, the supply of primary care physicians, and the child's usual source of routine well child care, predicted routine emergency department use for sick care. The effect of primary care physician supply is consistent with other studies that have demonstrated that the availability of primary care services has a significant impact on where families seek care when they are sick (Halfon et al., 1996).

Purpose

The purpose of this study is to examine a re-engineering process in order to increase access for TRICARE Prime enrollees at MACH (MACH Prime 1), better utilize primary care providers, and reduce overall costs in providing primary care. This study is intended to show the effect on access for MACH Prime 1 enrollees as a result of a re-engineering process. The hypothesis (H_0) is UCC utilization by MACH Prime 1 enrollees will decrease as a result of a re-engineering process. The alternate hypothesis (H_A) is UCC utilization by MACH Prime 1 enrollees is not affected as a result of a re-engineering process. This study is intended to provide the eligible beneficiaries, specifically the enrollees in MACH Prime 1, with high quality, easily accessible primary care. In doing so, cost savings can be realized by providing

this care utilizing health care providers, ancillary support and other resources in the most efficient manner possible. The process this facility uses for re-engineering and primary care delivery can serve as a model for other facilities facing a similar situation.

Methods and Procedures

This formal study is cross-sectional in nature, which represents a "snapshot" of UCC utilization at a point in time. This design, however, allows for further longitudinal studies over an extended period of time as health care trends are continually changing. This study is of ex post facto design, which places no control over the demographic categories and the effect the re-engineering process has on access. Reported information will only reflect what has occurred as a result of the initiative.

Secondary data will be internally collected by means of non-behavioral observation through record analysis of the Composite Health Care System (CHCS). Demographic information will be gathered on the time and total numbers of patients that present to the UCC to establish a trend on UCC usage. A 12-month time span of data, beginning in April 1998 and analyzed monthly, will provide usage trends that includes seasonal spikes and declines such as the cold and flu season. This yearly average of baseline data will be compared to April 1999, which is the first month of UCC operation following commencement of the Re-engineering Initiative.

Specific demographic data gathered will include patient acuity, gender, age, and their TRICARE Prime enrollment site (if one exists). Descriptive statistics will be used to measure the location and spread of the data. Specific measures for this study are mean, median, range, and standard deviation. Mean is simply the arithmetic average of the scores while median is the point that divides a distribution of scores into two equal halves, so that half the scores are

above the median and half are below it. Range is the difference between the largest and smallest scores in the distribution, while standard deviation measures the amount of variability or score dispersion about the mean of the distribution.

A comparison will be made between the demographic categories to show changes in UCC usage by TRICARE Prime beneficiaries enrolled in MACH Prime 1. Included in this comparison will be the Pediatric Clinic, which, although a separate clinic from the GOPC, is not a separate enrollment site. The comparison will focus on the delta between the utilization rates of MACH Prime 1 and what changes occurred as a result of re-engineering. The intent will be to show that as a result of the re-engineering plan, use of the UCC by MACH Prime 1 enrollees will decline by increasing access in the GOPC.

The Process Action Team (PAT) methods, how the data was collected, and the Re-engineering Initiative itself will be explained in this section. This information is key as to how the decision to implement the Re-engineering Initiative came to fruition. This information will serve as the basis for how the decision was made on whether or not to have a re-engineering plan, how the data was collected, and the actual Re-engineering Initiative itself. Once this information is conveyed, the groundwork will be laid for synthesizing the results of the data, and discussing the results of the Initiative.

The Process Action Team

A Process Action Team (PAT), comprised of members from both clinical and administrative areas, was formed to confront the problem of how to increase access in the GOPC for TRICARE Prime enrollees. The PATs primary focus was to specifically look at whether or not MACH needed to change their primary care delivery system, and if so, come up with viable courses of action. Factors included in the decision making process were how

to re-structure the UCC to increase primary care access, implement cost saving measures, and maintain the quality of care that beneficiaries deserve.

A PAT is essentially a "group that has two or more individuals interacting with each other in order to accomplish a common goal" (Ivancevich and Matteson, 1996, p. 279). There is no specified structure of a PAT; rather, a common sense approach is used to determine the composition. With the specific issue of primary care delivery in a health care facility, there are numerous departments and personnel who have a vested interest in the outcome of a project such as this. With that in mind, the PAT was designed to represent all parties that could possibly be affected by a change in health care delivery systems. The PAT for this project consisted of representatives from the Departments of Primary Care, Nursing, Administration and Clinical Services. Other members included were the Chiefs of Primary Care, GOPC, Internal Medicine, and Pediatrics. Rounding out the PAT was the UCC Head Nurse, GOPC Head Nurse, EMT Supervisor, and Director of Marketing.

The PAT met on seven occasions with the group dynamics changing significantly from the initial meeting to the final meeting where courses of action were finally decided. The PAT definitely experienced the five stages of group development (Ivancevich and Matteson, 1996): Forming, Storming, Norming, Performing, and Adjourning. In the forming stage, there was a great deal of uncertainty as to why the team was being formed as well as what the basic structure and hierarchy of the group was supposed to be. There were many preconceived notions that the purpose of the team was to close the UCC and eliminate unneeded personnel. The team quickly moved into the storming stage as the discussion turned to whether the UCC should be closed completely. It was interesting to note the differences between the civilian and military members of the team as this topic was discussed.

Although both groups wanted what was best for the beneficiaries, the civilians possibly have their positions in jeopardy if the team decides on complete closure, whereas the military does not have this concern. All team members debated the issue of cost versus need and brought up many anecdotal situations that could justify both options. In the norming stage, members had aired out their personal and professional feelings on the issue and moved into possible solutions. A motion was brought up as to the impact of partial closure of the UCC and what effect that might have on all parties concerned. This suggestion brought all members of the team on to some common ground as a possible win-win situation for the beneficiaries and staff. The cohesiveness of the group became more established as more ideas and concerns were expressed in support of this idea. In the performing stage, all of the team members were in agreement on a partial closure of the UCC as the primary recommendation for the Executive Committee. The team at this point is completely effective and feels quite proud of the accomplishment thus far. All members feel at ease and are content with the fact they had a voice in the process. In addition to the primary course of action of a partial closure of the UCC, the other courses of action the PAT developed were: remain status quo, complete closure of the UCC, and closure of the UCC from 2300 – 0700. In the final adjourning stage, there was no formal termination of the team as members realized that the primary mission of the team had been completed. All team members, having been in on the decision making process, are now more likely to assist in making the Re-engineering Initiative a success.

The re-engineering courses of action were briefed to the Executive Committee of MACH, which is comprised of the Hospital Commander, the Deputy Commander for Administration (DCA), the Deputy Commander for Clinical Services (DCCS), the Deputy Commander for Nursing Services (DCNS), the Hospital Sergeant Major, and Chief of Quality

Management (QM). The essential function of the Executive Committee is to make critical decisions regarding issues of great significance to the organization. The Executive Committee made the decision to implement the PAT recommendation of closing the UCC during the hours of 0700 – 2300 Monday through Saturday.

Data Collection

Data was collected for this study using the Composite Health Care System (CHCS). Baseline data was established using the twelve previous months starting from 1 April 1998 and concluding 31 March 1999. A full year of data was collected to not only capture seasonal trends that affect many health care facilities, but to also obtain a complete range of variables that affect a Military Treatment Facility. These include: normal cyclical permanent change of duty stations (PCS), vacations, deployments, paydays, and training holidays. Data for the month of April 1999 was collected to compare UCC utilization after implementation of the Re-engineering Initiative.

The data from CHCS is in a programming language called MUMPS and does not allow for ad hoc queries to be sorted and analyzed. As a result, the fields for the study database were selected and created, and the query parameters and output parameters designed. Using the enable history function of the terminal emulation software, the ad hoc report is printed to the screen. The query is run and the data, in raw form, is viewed on the computer monitor. The data is then copied (1024k at a time) and pasted into Microsoft Word® as an MS DOS® text file with line breaks (to ensure data is in columnar format). A Microsoft Access® database is created and the data imported into specified fields. This data is then analyzed (exported) with Microsoft Excel®. Databases were created and analyzed for each month and a composite database was formed to display data for the year as a whole. With the

data in these two databases, queries were run using the Access[®] program and statistics were run using Excel[®].

To ensure accuracy of the data, CHCS was cross-referenced with the actual sign-in log (which patients must complete upon presenting for care), and the actual record of care that is completed on each patient. On occasion, discrepancies arose in one or more of the database fields. This may have occurred by some of the data not being entered into the CHCS database, or being entered incorrectly. Checking the three sources (sign-in log, record of care, and CHCS) of data and simply verifying which sources had the same information rectified these discrepancies. For example, a patient may not have their age entered into CHCS resulting in this field being blank for that patient in the database. The age can be verified from the sign-in log as well as the record of patient care as age is one of the initial triage criteria.

The Re-engineering Initiative

The premise underlying the Re-engineering Initiative is to create greater access to primary care in the GOPC, use existing resources in both the UCC and the GOPC more efficiently, and have non-urgent patients' (that do not require any type of treatment) health care needs met in a primary care environment. With that in mind, the UCC under the Re-engineering Initiative has undergone significant change. The 24-hour per day UCC that was defined in the original system (Appendix B2) now operates as two different systems: a "Treatment Area" and a UCC depending on the time of day. For the purpose of this study, all collected data will be classified as having come from the UCC.

From 0700 – 2300 Monday through Saturday, the UCC is known as the "Treatment Area" and is staffed by a Physician of the Day (POD). The POD is a GOPC physician who

provides care to patients who literally require some form of treatment. This can range from intravenous fluids, to sutures, to fractures, to defibrillation. The POD staffs the UCC in two shifts, 0700 – 1500 and 1500 – 2300 (Table 3). Additionally, the POD also sees regularly appointed patients and has no more than two appointments booked per hour, which is dependent on the time of day (two appointments during slow times of the day and zero during times of high patient volume). This allows sufficient time to provide care for any patients requiring treatment and still perform in the role of a PCM.

MONDAY - SATURDAY						
	8-Hour Shifts				12-Hour Shifts	
	0700-1500	0700-1630	1500-2300	2300-0700	0700-1900	1900-0700
Physicians				1 ¹		
Nurses	2 ²		2 ²	1		
91Bs		3 ³			3	2
EMT Section	1 ⁴				2	1
Receptionists						

¹Contract physicians.
²One nurse serves as the triage nurse and one serves as the treatment nurse.
³These 91Bs are the senior NCOs of the section and conduct administrative duties in addition to patient care.
⁴The EMT supervisor. He may also work some 12-hour shifts when shortages arise.

SUNDAYS AND HOLIDAYS						
	8-Hour Shifts				12-Hour Shifts	
	0700-1500	1500-2300	2300-0700	1300-2100	0700-1900	1900-0700
Physicians				1 ¹	1 ¹	1 ¹
Nurses	2 ²	2 ²	1			
91Bs					3	2
EMT Section	1 ³				2	1
Receptionists						

¹Contract physicians.
²One nurse serves as the triage nurse and one serves as the treatment nurse.
³The EMT supervisor. He may also work some 12-hour shifts when shortages arise.

Table 3 – Re-engineering Initiative UCC/Treatment Area Hours of Operation

From 2300 – 0700 Monday through Saturday and from 0700 Sunday – 0700 Monday the UCC operates in the same manner and structure as under the original system, but is staffed

with providers (physicians) under separate individual contracts rather than a contract with an emergency care service. This significantly reduces operating costs, down from \$105 per hour under the original EMSA contract to a staggered amount of \$60 per hour Monday through Friday nights, \$75 per hour for Saturday nights and Sundays, and \$95 per hour for the six major holidays.

The nurses staff the UCC/Treatment Area in a manner similar to the original system. Two nurses are on staff for the 0700 – 1500 and 1500 – 2300 shifts, with one nurse from 2300 – 0700. During the first two shifts, one nurse serves as the triage nurse and one serves as the treatment nurse. Both nurses can fill either position, as does the 2300 – 0700 nurse who must perform in both roles. Weekend and holiday shifts are staffed the same as weekday shifts.

The 91Bs schedule has changed under the Initiative. Three 91Bs (including the NCOIC) are on duty from 0730 – 1630 and conduct administrative duties as well as patient care. Three 91Bs staff the 0700 – 1900 shift with two from 1900 – 0700. The weekend and holiday shifts are staffed the same as weekday shifts.

The ambulance section staffs the UCC/Treatment Area from 0700 – 1900 with two EMTs and with one from 1900 – 0700. Additionally, the supervisor works an eight-hour shift from 0700 – 1500 Monday through Friday, but on occasion may work a ten or twelve hour shift depending on staffing shortages as a result of the twelve hour shifts (each EMT has only 3.5 shifts per week, and shortages occur). The weekend and holiday shifts are staffed the same as weekday shifts.

When an unscheduled patient presents to the facility for health care (termed walk-in), they are logged in at the “Triage Center” and triaged within five minutes. The Triage Center uses RNs to evaluate a patient’s condition and either assist them in making an appropriate

appointment in the GOPC or refer them to the Treatment Area for care. Patients are seen according to the triage system that separates patients as to the seriousness or severity of their medical needs. With the Re-engineering Initiative, the triage system that the clinic uses to determine patient classification has been refined. The previous system of emergent, urgent, semi-urgent and non-urgent has been changed to reflect acuity on a numerical basis from 1 to 5. A patient triaged as 1 under the new system is equivalent to emergent under the old system. A patient triaged as 2 or 3 is the equivalent of urgent under the old system, and a patient triaged as 4 or 5 is classified as non-urgent.

A patient classified as 1 needs immediate care to prevent loss of life, limb or eyesight. The physician must initiate evaluation of the patient within five minutes or less. Nursing must insure immediate bed availability in room 26 (treatment room), notify the physician of the patient, and insure that one-on-one nursing care is provided until the condition stabilizes.

A patient classified as 2 requires care to prevent life-threatening deterioration. The physician must initiate evaluation of the patient within 15 minutes. Nursing must insure immediate bed availability or hold the patient in the triage area so close supervision can be maintained until a bed is made available. Nursing must also notify the physician of the patient and insure constant monitoring of the patient until the condition stabilizes.

A patient classified as 3 has a condition(s) that requires treatment, but is not life-threatening or likely to worsen. The physician must initiate evaluation of the patient within one hour. Nursing will determine if an appointment is available within an hour or if the patient's condition requires UCC or Treatment Area resources (pending time of day).

A patient classified as 4 is non-urgent, but the condition requires treatment today (not at risk of significant deterioration if there is a delay in care). The triage nurse will give the

patient an appointment within four hours. If an appointment is not available within four hours, the triage nurse will refer the patient to the POD for evaluation and treatment.

A patient classified as 5 should be treated in their primary care facility (GOPC, PEDS, TRICARE Prime Fort Eustis, etc.). The triage nurse will give the patient an appointment within 24 hours. If the patient refuses a delay in care to the following day, the POD will see the patient after patients with higher acuities have been treated first.

The overall goal of this system is to get the patient triaged and to the appropriate environment for care as medical need dictates. Non-urgent patients (triaged 4 or 5) who do not require any type of treatment are given appointments in the GOPC. Since these patients are seen in the GOPC, they do not count in the total number of patients seen for that day by the UCC. However, the data for April reflects many non-urgent patients. These patients were counted in the total UCC numbers and come from two sources: patients seen at night after the GOPC closes (2000 – 0700) and patients, although triaged as non-urgent, required some form of treatment and were seen by the POD. Additionally, there are patients seen by the POD that do not count in the UCC numbers. These include: patients seen because all appointments in the GOPC were filled and patients seen by the POD who at that time was not performing any type of treatments, and as a result, provided care to the patient rather than making them wait.

The GOPC under the Re-engineering Initiative shifted the providers and ancillary staff to make more appointments available when the greatest flow of patients is experienced: late afternoon through early evening. The GOPC (Appendix C2) operates from 0700 – 2000 with active duty sick call occurring from 0700 – 0850. The first available appointment is scheduled for 0900 with the last appointment booked at 1930. From 2000 – 2300 there are no scheduled appointments, rather the POD and ancillary staff triage all walk-in patients.

Patients triaged as 1, 2, or 3 are treated according to the UCC/Treatment Area protocol. Because the GOPC is closed, these patients are all classified as being treated in the UCC, and are reflected in the data. Patients who present and are triaged as 4 or 5 are encouraged to take an appointment the next day with their PCM. These patients are given the option to be treated by the POD, however, there may be some wait time associated with this choice as patients with higher acuities will be seen and treated first.

The providers under the Re-engineering Initiative work a staggered schedule with the majority of physicians and PAs working a 4-day, 40-hour workweek (Table 4). Three of the four PAs (one opted not to work the 4 day workweek) work the 0900 – 2000 shift Monday through Friday and are not included in the POD rotation because they do not have the scope of care to function in a urgent care setting. The physicians rotate through as POD (to include Saturdays) and work until 2300 (late POD shift) and are not included in the Monday through Friday 0900 – 2000 rotation. Both physicians and PAs feel there is a fair trade-off of working until 2000 Monday through Friday with and every fourth Saturday (PAs), compared to working until 2300 (physicians) and Saturdays. Although the physicians are working later and also on Saturdays, there are many more of them in the rotation and will not have to pull the 2300 or Saturday shift often. The PAs rotation will occur more frequently, as there are very few to spread this schedule around. Both parties had a tremendous amount of input into making this schedule as equitable as possible, and because of their input, will be much more likely to ensure its success. Saturdays, depending on the rotation schedule, the mix of providers can range from physicians to PAs to pediatricians to pediatric nurse practitioners.

The GOPC has one head nurse (civilian RN) who works from 0630 – 1630 Monday through Friday and one nurse (91C) who works from 0630 to 1530. The primary

responsibility of the 91C is to ensure all military personnel who present for sick call are screened and ready to be seen by the providers. The 91Bs are staffed similarly to the original system with three to four on duty from 0630 – 1530 and two instead of one from 1100 – 2000. Saturdays now have shifts from 0900 – 2000, a one-hour increase, with two 91Bs on staff.

MONDAY Through FRIDAY								
	8-Hour Shifts					10-Hour Shifts		12-Hour Shifts
	0630-1530	0630-1630	POD 0700-1500	POD 1500-2300	0700-1600	0700-1800	0900-2000	1100-2000
Physicians			1	1		5 - 11 ¹		
Phy. Assts.					0 - 1 ¹	0 - 2 ¹	1 ³	
Nurses	1	1 ²						
91Bs	3 - 4							2
Secretary	1							
Receptionists	1				2 ⁴			

¹These numbers vary due to providers working four 10-hour days per week, which can include weekends. Some shifts will simply have more providers (both PA's and physicians) than others. Other factors such as sick days, leaves, and deployments also contribute to this variance.

²Head Nurse.

³All 4 PA's rotate one week per month.

⁴One receptionist works 0730 to 1630.

SATURDAYS			
	8-Hour Shifts		10-Hour Shifts
	POD 0700-1500	POD 1500-2300	0900-2000
Physicians	1	1	0 - 2 ¹
Phy. Assts.			0 - 1 ¹
Peds NP			0 - 1 ¹
91Bs			2 ²
Receptionists			1 ³

¹Includes one GOPC physician or PA and either one pediatrician or pediatric nurse practitioner.

²Show time is 0845 and release time is 1930. The 91C (nurse) may serve in this capacity on Saturdays.

³This duty rotates through the 91Bs scheduled for that day.

Table 4 – Re-engineering Initiative GOPC Hours of Operation

The Pediatric Clinic, Outpatient Pharmacy, Laboratory, and Radiology Department, although not directly affected by the shift of resources and change in procedures of the

UCC/Treatment Area and GOPC, have been impacted by the Re-engineering Initiative. With greater access to primary care in the GOPC, especially in the late afternoon and early evening hours, a greater volume of lab and radiology requests has been experienced. This increase, however, has not been significant enough to warrant a change in the operating procedures of either department. The Pharmacy has not been significantly effected, mainly because the operating hours have not changed and a majority of the patients who present after pharmacy hours can have their pharmaceutical needs met through the use of the crash cart as described in the original system. The Pediatric Clinic has not been significantly effected either. Although the pediatrician lost to retirement in December has not been replaced, patient volume in the clinic has remained the same. The impact has been felt, however, in the GOPC and UCC/Treatment Area. As appointments become booked in the Pediatric Clinic, the overflow of patients seek the UCC/Treatment Area for care.

Results

The data for this study was collected to determine patterns of utilization for the UCC. With that in mind, it was critical to capture which populations, both enrolled and non-enrolled were presenting to the UCC, and establish a yearlong demographic representation of these UCC patients (Appendices D1 through D3). Besides categories of enrolled and non-enrolled patients, gender, age and military status were also collected. Additionally, it was crucial to determine what time of day patients were presenting, as well as the acuity (emergent, urgent or non-urgent) of when they arrived (Appendices G1 through G8). To obtain a more thorough understanding of the data dispersion, Appendices D1 through D3 also includes range, median and standard deviation. In addition to the demographic data collected, hourly patient flow was compiled to determine which hours of the day patient surges can be anticipated as well as

the times of the day when very little patient flow is likely. Appendices E1 through E3 represent this data in tabular format, while Appendices F1 through F16 represent this data in graph format. This data was compared to the month following the implementation of the Re-engineering Initiative.

The UCC had 19,881 visits from 1 April 1998 through 31 March 1999, with a monthly average of 1,656.8, and a daily average of 54.5 patients. March 1999 had the largest patient volume with 1,969 patients with July 1998 having the least with 1,522. Following the Re-engineering Initiative, the number of UCC visits for April 1999 dropped 629.8 to 1,027, a 38.0 percent decrease.

For the year, males outnumbered females 10,022 (50.4 percent) to 9,859 (49.6 percent), with a monthly average of 835.2 for males vs. 821.6 for females. March 1999 had the most male visits with 973 (49.4 percent of total) while July 1998 had the least with 746 (49.0 percent of total). March 1999 had the most female visits with 996 (50.6 percent of total) while August 1998 had the least with 744 (48.1 percent of total). September 1998 had the greatest percentage of male visits with 53.0 percent (905 visits) to 47.0 percent (804 visits) for females, while February 1999 had the greatest percentage of female visits with 52.8 percent (920 visits) to 47.2 percent (824 visits) for males. Following the Re-engineering Initiative, male visits outnumbered female visits 522 to 505. This is a drop of 313.2 or 37.5 percent for males and 316.6 or 38.5 percent for females over the yearly average. The percentage of visits rose .4 for males to 50.8, while for females the percentage dropped .4 to 49.2 percent.

There were 5,831 active duty visits, averaging 485.9 visits per month, which comprised 29.3 percent of the total visits to the UCC. September 1998 had the most active duty visits with 630, which also constitutes the greatest percentage of visits at 36.9 percent.

November 1998 had the least active duty visits with 388 (25.4 percent of total), while February 1999 had the least percentage of visits at 24.4 percent (426 visits). Following the Re-engineering Initiative, active duty visits dropped from 183.9 to 302, a 37.8 percent decrease, while the percentage of visits rose .1 to 29.4 percent.

The age groups of the UCC population studied were categorized as less than 14 years of age (considered pediatric), 14 to 64, and ages 65 and older (Medicare eligible). Of the 0 to 14-year-olds, the UCC had 5,838 visits for the year, a 486.5 per month average, which represents 29.1 percent of the total visits. March 1999 had the most visits with 732 (37.2 percent of total) while August 1998 had the least with 340 (22.0 percent of total). February 1999 had the greatest percentage of visits with 39.4 percent (687 visits) while August 1998 had the least with 22.0 percent. Following the Re-engineering Initiative, visits of this age group dropped 155.5 to 331, a 32.0 percent decrease, while the percentage of visits rose 8.0 to 37.2 percent.

Of the 14 to 64-year-olds, the UCC had 13,585 visits for the year, a 1,132.1 per month average, which represents 68.5 percent of the total visits. September 1998 had the most visits with 1,256 (73.5 percent of total) while November 1998 had the least with 990 (64.7 percent of total). August 1998 had the greatest percentage of visits with 75.2 percent (1,163 visits) while February 1999 had the least with 58.7 percent (1,023 visits). Following the Re-engineering Initiative, visits of this age group dropped 452.1 to 680, a 39.9 percent decrease, while the percentage of visits decreased 7.5 to 61.0 percent.

Of the over 64-year-olds, who are Medicare eligible and unable to enroll in TRICARE Prime, the UCC had 458 visits for the year, a 38.2 per month average, which represents 2.3 percent of the total visits. June 1998 had the most visits with 50 (3.1 percent of total), while

January and February 1998 had the least with 34 (1.9 percent of total). June 1998 had greatest percentage of visits with 3.1 percent (50 visits) while March 1999 had the least with 1.8 percent (35 visits). Following the Re-engineering Initiative, visits of this age group dropped 22.2 to 16, a 58.1 percent decrease, while the percentage of visits dropped .5 to 1.8 percent.

Enrollment site and status (either enrolled or not) are key pieces of information in determining which populations are accessing primary care. TRICARE Prime enrollees must be able to access their care through their PCM, and should utilize the UCC for truly emergent or urgent cases. For the year, enrolled visits outnumbered non-enrolled visits 12,156 (61.0 percent) to 7,725 (39.0 percent) with a monthly average of 1,013 for enrolled vs. 643.8 for non-enrolled. March 1999 had the most enrolled visits with 1,302 (66.1 percent of total) while June 1998 had the least with 826 (51.6 percent of total). June 1998 had the greatest number of non-enrolled visits with 774 (48.4 percent of total) while December 1998 had the least with 546 (35.5 percent of total). February 1999 had the greatest percentage of enrolled visits with 67.0 percent (1,168 visits) to 33.0 percent for non-enrolled (576 visits) while June 1998 had the greatest percentage of non-enrolled visits with 48.4 percent (774 visits) to 51.6 percent (826 visits). Following the Re-engineering Initiative, enrolled visits outnumbered non-enrolled visits 686 to 341. This represents a drop of 327 or 32.3 percent for enrolled and 302.8 or 47.0 percent for non-enrolled visits. The percentage of visits rose 5.8 for enrolled to 66.8 percent, while for non-enrolled the percentage dropped 5.8 to 33.2 percent.

Patients enrolled to the MACH Prime 1 General Outpatient Clinic Fort Eustis (GOPC FE) had 4,158 for the year, a 346.5 per month average, which represents 20.9 percent of the total visits. September 1998 had the most visits with 430 (25.2 percent of total) while June 1998 had the least with 270 (16.9 percent of total). August 1998 had the greatest percentage

of visits with 25.7 percent (397 visits) while June 1998 had the least with 16.9 percent (270 visits). Following the Re-engineering Initiative, visits dropped 125.5 to 221, a 36.2 percent decrease, while the percentage of visits rose .6 to 21.5 percent.

Patients enrolled in the MACH Prime 1 Pediatric Clinic (PEDS) had 2,194 visits for the year, a 182.8 per month average, which represents 10.9 percent of the total visits. March 1999 had the most visits with 323 and the greatest percentage of visits with 16.9 percent, while July 1998 had the least visits with 98 and the least percentage of visits with 6.4 percent. Following the Re-engineering Initiative, visits dropped 51.8 to 131, a 28.4 percent decrease, while the percentage of visits rose 1.9 to 12.8 percent.

Patients enrolled to TRICARE Prime Fort Eustis (TP FT E), which is contracted to Sentara Health Systems, had 4,152 visits for the year, a 346 per month average, which represents 20.9 percent of the total visits. March 1999 had the greatest number of visits with 420 (21.3 percent of total) while August 1998 had the least with 295 (19.1 percent of total). November 1998 and February 1999 had the greatest percentage of visits with 23.9 percent (365 and 417 visits) while April 1998 had the least with 18.6 percent (306 visits). Following the Re-engineering Initiative, visits dropped 110 to 236, a 31.8 percent decrease while the percentage of visits rose 2.1 to 23 percent.

Patients enrolled in the "Other" group had 1,652 visits for the year, a 137.7 per month average, which represents 8.3 percent of the total visits. This group consists of eligible beneficiaries enrolled in TRICARE Prime, but at a site or facility other than MACH. This can also include beneficiaries enrolled to PCMs who are members in the TRICARE Prime network. February 1999 had the greatest number of visits (157) and the greatest percentage of visits (9.0 percent), while August 1998 had the least number of visits with 103 and the least

percentage of visits at 6.7 percent. Following the Re-engineering Initiative, visits dropped 39.7 to 98, a 28.8 percent decrease, while the percentage of visits rose 1.2 to 9.5 percent.

Arrival time is crucial in determining staffing levels for providers and ancillary staff. It makes the most sense to arrange schedules to accommodate when patients are most likely to present. The study looks at the three main shifts the hospital employed before the Re-engineering Initiative: 0700 – 1459, 1500 – 2259, and 2300 – 0659. Because patient flow is so critical to the re-engineering process, the data was further dissected to determine hourly patient flow, and will be covered later in this section. For the year, the 0700 – 1459 shift had 8,391 visits, a 699.3 per month average, which represents 42.2 percent of the total visits. March 1999 had the most visits with 871 (44.2 percent of total) while July 1998 had the least with 581 (38.2 percent of total). August 1998 had the greatest percentage of visits with 46.2 percent (715 visits) while November 1998 had the least with 38.1 percent (582 visits). Following the Re-engineering Initiative, visits dropped 426.3 to 273, a 61.0 percent decrease, while the percentage of visits dropped 15.6 to 26.6 percent.

The 1500 – 2259 shift had 8,714 visits for the year, a 726.2 per month average, which represents 43.9 percent of the total visits. March 1999 had the greatest number of visits with 841 (42.7 percent of total) while December 1998 had the least with 633 (41.2 percent of total). November 1998 had the greatest percentage of visits with 47.1 percent (720 visits), while December 1998 had the least with 41.2 percent (633 visits). Following the Re-engineering Initiative, visits dropped 164.2 to 562, a 22.6 percent decrease, while the percentage of visits rose 10.9 to 54.7 percent.

The 2300 – 0659 shift had 2,776 visits for the year, a 231.3 per month average, which represents 14.0 percent of the total visits. January 1999 had the greatest number of visits with

267 (15.2 percent of total) while August 1998 had the least with 191 (12.3 percent of total). September and December 1998 had the greatest percentage of visits with 15.6 percent (266 and 240 visits), while February 1999 had the least with 12.2 percent (212 visits). Following the Re-engineering Initiative, visits dropped 39.3 to 192, a 17.0 percent decrease, while the percentage of visits rose 4.7 to 18.7 percent.

Patient acuity is another crucial determinant as to what type of environment care should be provided (primary care vs. UCC). The study looks at the acuity of a patient when presenting for care and gives an excellent profile of the population seeking care at MACH's UCC. This data is also graphically depicted in Appendices G1 through G8. For the year, patients triaged as emergent had 73 visits, a 6.1 per month average, which represents .4 percent of total visits. April 1998 had the greatest number of visits with 21 and the greatest percentage of visits with 1.3 percent of total. July 1998 and February 1999 had the least number of visits with 1 and the least percentage of visits with .1 percent of total. Following the Re-engineering Initiative, there was 1 emergent patient that represented .1 percent of the total.

There were 2,520 patients triaged as urgent, a 210.0 per month average, which represents 12.8 percent of total visits. May 1998 had the greatest number of urgent patients with 296 and the greatest percentage of visits with 17.7 percent of total visits. March 1999 had the least number of urgent patients with 151 and the least percentage of visits with 7.7 percent. Following the Re-engineering Initiative, visits rose 70 to 280, a 25.0 percent increase, while the percentage of visits rose 14.5 to 27.3 percent.

There were 17,288 patients triaged as non-urgent, a 1,440.7 per month average, which represents 86.8 percent of total visits. March 1999 had the greatest number of urgent patients

with 1,815 and the greatest percentage of visits with 92.2 percent of total visits. November 1998 had the least number of urgent patients with 1,285 (84.0 percent of total), while May 1998 had the least percentage of visits with 81.2 percent of total. Following the Re-engineering Initiative, visits dropped 694.7 to 746, a 48.2 percent decrease, while the percentage of visits decreased 14.2 to 72.6 percent.

Appendices E1 through E3 represents the flow of patients broken down by hour for the 12-month period of the study as well as the comparison month of April 1999. This data is also graphically depicted in Appendices F1 through F16. Overall, between April 1998 and March 1999, the UCC averaged 54.5 patients per day and 2.27 patients per hour. The time period between 1800 and 1859 experienced the greatest flow of patients with 1,302, a 108.5 per month average or 3.58 patients per hour average. This represents 6.5 percent of the total visits for the year. The 0300 – 0359 time period experienced the least flow of patients with 221, a 19.7 per month average or .61 patients per hour average. This represents 1.1 percent of the total visits for the year.

For April 1998, the time period between 1900 and 1959 experienced the greatest flow of patients with 109, a 3.58 patient per hour average or 6.6 percent of the total visits for the month. The 0300 – 0359 time period experienced the least flow of patients with 12, a .40 patient per hour average or .70 percent of the total visits for the month. For May 1998, the time period between 1900 and 1959 experienced the greatest flow of patients with 114, a 3.68 patient per hour average or 6.8 percent of the total visits for the month. The 0400 – 0459 time period experienced the least flow of patients with 15, a .48 patient per hour average or .90 percent of the total visits for the month. For June 1998, the time period between 1800 and 1859 experienced the greatest flow of patients with 103, a 3.43 patient per hour average or 6.4

percent of the total visits for the month. The 0200 – 0259 time period experienced the least flow of patients with 11, a .48 patient per hour average or .70 percent of the total visits for the month. For July 1998, the time period between 1800 and 1859 experienced the greatest flow of patients with 119, a 3.84 patient per hour average or 6.4 percent of the total visits for the month. The 0200 – 0259 time period experienced the least flow of patients with 14, a .45 patient per hour average or .90 percent of the total visits for the month. For August 1998, the time period between 0800 and 0859 experienced the greatest flow of patients with 110, a 3.67 patient per hour average or 7.1 percent of the total visits for the month. The 0400 – 0459 time period experienced the least flow of patients with 14, a .47 patient per hour average or .90 percent of the total visits for the month. For September 1998, the time period between 2000 and 2059 experienced the greatest flow of patients with 110, a 3.83 patient per hour average or 6.7 percent of the total visits for the month. The 0300 – 0359 time period experienced the least flow of patients with 16, a .53 patient per hour average or .90 percent of the total visits for the month. For October 1998, the time period between 1800 and 1859 experienced the greatest flow of patients with 132, a 4.26 patient per hour average or 8.0 percent of the total visits for the month. The 0400 – 0459 time period experienced the least flow of patients with 15, a .48 patient per hour average or .90 percent of the total visits for the month. For November 1998, the time period between 1600 and 1659 experienced the greatest flow of patients with 118, a 3.93 patient per hour average or 7.7 percent of the total visits for the month. The 0200 – 0259 time period experienced the least flow of patients with 13, a .43 patient per hour average or .90 percent of the total visits for the month. For December 1998, the time period between 1100 – 1159 and 1300 – 1359 experienced the greatest flow of patients with 94, a 3.03 patient per hour average or 6.1 percent of the total visits for the

month. The 0300 – 0359 time period experienced the least flow of patients with 12, a .39 patient per hour average or .80 percent of the total visits for the month. For January 1999, the time period between 1700 and 1759 experienced the greatest flow of patients with 112, a 3.61 patient per hour average or 6.4 percent of the total visits for the month. The 0400 – 0459 time period experienced the least flow of patients with 23, a .74 patient per hour average or 1.3 percent of the total visits for the month. For February 1999, the time period between 0900 and 0959 experienced the greatest flow of patients with 118, a 4.21 patient per hour average or 6.8 percent of the total visits for the month. The 0200 – 0259 and the 0300 – 0359 time period experienced the least flow of patients with 17, a .61 patient per hour average or 1.0 percent of the total visits for the month. For March 1999, the time period between 0900 and 0959 experienced the greatest flow of patients with 150, a 4.84 patient per hour average or 7.6 percent of the total visits for the month. The 0200 – 0259 time period had the least flow of patients with 18, a .58 patient per hour average or .90 percent of the total visits for the month.

For the comparison month of April 1999, the time period between 2000 and 2059 experienced the greatest flow of patients with 98, a 3.27 patient per hour average or 9.5 percent of the total visits for the month. Compared to the average for the year (92.9) for that time period, this is an increase of 5.1 patients per hour and a 5.5 percent increase. The 0400 – 0459 time period experienced the least flow of patients with 11, a .37 patient per hour average or 1.1 percent of the total visits for the month. Compared to the average for the year (19.7) for that time period, this is a decrease of 8.7 patients per hour and a 44.1 percent decrease.

Discussion

This study began over ten months ago to look at the concept of permanently closing the UCC. With such a large number of patients presenting to the UCC with acuities of non-

urgent, and a lack of access in the GOPC, the winds of change were dictating that the process of delivering primary care at McDonald Army Community Hospital be made more efficient.

The overall goal for this Initiative was to have the beneficiaries health care needs met in the most appropriate environment of care, whether that is the UCC or the GOPC. In order for this to be accomplished successfully, beneficiaries had to be able to access the care when they deemed it necessary. The Re-engineering Initiative was developed to increase access for TRICARE Prime enrollees, and decrease the trend of utilizing the urgent care setting for primary care needs. With that in mind, the data that was collected and analyzed for this study supports the very reason as to why this study was conducted. Appendices D1 through D3 display this data in tabular format.

With 19,881 visits to the UCC between April 1998 and March 1999, factors that influenced each individual month greatly affected how many patients presented and at what times. For example, seasonal trends such as the commencement of the school year and summer vacations resulted in less visits to the UCC for June (1,600), July (1,522) and August (1,547), down from the yearly mean of 1,656.8. Another summer factor impacting the UCC is the tremendous amount of turnover on military installations as service members and their families receive orders for a permanent change of duty stations (PCS). In September, as summer came to an end and the school year began, visits more closely resembled the yearly mean with 1,709, while in October the 1,653 visits were almost identical to the yearly mean. Another trend that affected visits is the holiday season, to include Thanksgiving and Christmas. As beneficiaries traveled out of the catchment area during this time frame, the UCC experienced another slow period with 1,529 visits in November and 1,537 in December. Following the holidays, the cold and flu season greatly impacted the UCC. All categories of

beneficiaries were affected as January (1,751), February (1,744) and March (1,969) recorded significantly higher visits to the UCC than the yearly mean. For April 1999, the significant drop in the number of visits directly correlates to the Re-engineering Initiative. With a more efficient use of UCC resources in the GOPC, additional appointments were created and beneficiaries were able to have their health care needs met in the appropriate environment.

The gender of UCC patients does not appear to be affected by any one factor or trend; rather, a random pattern seems to dictate the number and percentage of patients that present to the UCC throughout the year. The male and female populations for the comparison month of April 1999 experienced a significant reduction in the number of visits, but maintained an equal percentage of visits.

The active duty population, on the other hand, had a significant range for both the number of visits and the percentage of visits with July, August and September standing out from the rest of the months. This can be attributed to the large number of specialty courses and Advanced Individual Training (AIT) that occurs at Fort Eustis during the summer months. The heat and humidity in the Tidewater area of Virginia combined with the intensity of the training during this period resulted in many soldiers succumbing to heat injuries. For the comparison month, the number of visits was significantly reduced, while the percentage of visits remained nearly identical.

Looking at the specific age groups, the 0 – 14 group maintained a relatively equal number of patients and percentage of visits from April through October 1998. There was a significant rise in the categories beginning in November, steadily rising through March 1999. This is attributed to the military pediatrician that retired in December. This provider began the retirement process in November and did not have any appointments scheduled for that

month. The significant rise in the percentage of visits in February (39.4 percent) and March (37.2 percent) can be associated with the cold and flu season described in the previous paragraph. In April 1999 the pediatrician had yet to be hired, and although the number of patients in this age group was reduced, the percentage was comparable to the remaining five months of the study year when the pediatrician began the retirement process. The reduction in actual numbers can be attributed to the referral of patients in this age group to the GOPC where family practice providers have the scope of training to provide the necessary care.

The 14 – 64 age group began the study with numbers and percentage of visits higher than the yearly mean. As the transition from springtime to summer began in April 1998, more recreation and other outdoor activities (that diminished in November) occurred during this period and consequently more injuries and accidents. Additionally, the active duty population, which falls into this group, had higher numbers during this period, and with not enough access to appointments in the GOPC, numbers in the UCC increased. This age group, however, does not seem to be as affected by the cold and flu season as the pediatric population as numbers and percentage of visits were below the yearly mean. For the comparison month, April 1999 once again had a significant reduction in the number of visits and additionally the percentage of total visits. This age group seemed to benefit the most as more appointments were made available in the GOPC, and they came to the realization that their healthcare can now be met in the appropriate environment.

The 65 and older population did not display any specific utilization trends with the number and percentage of visits remaining very similar throughout the year. The Re-engineering Initiative resulted in a 58.1 percent decrease in visits as this population, who are Medicare eligible, was able to make appointments in the GOPC on a space-available basis.

Looking at the enrollment status of the population using the UCC, the total enrolled population visits and percentage of visits were both below the yearly mean for the first five months of the year studied, while six of the last seven months were above the yearly mean. Conversely, the non-enrolled population experienced the exact opposite trend. This pattern for the enrolled and non-enrolled populations can partially be attributed to the onset of TRICARE that was implemented on May 1st, 1998. As more and more beneficiaries became enrolled, and as appointments in the GOPC became booked or not available at a time when the patient could present, enrolled patients were forced to access the UCC for their care. Another factor that led to this trend is the seasonal trends of vacations and PCSs that were discussed in the previous section. For the comparison year, both populations experienced large decreases in UCC utilization. The enrolled population, however, had the percentage of visits higher than the yearly mean but similar to the last two months of the study year. This percentage is more on-track with actual utilization as TRICARE enrollment stabilizes. The non-enrolled population percentage of visits dropped because enough access was created in the GOPC to accommodate this population on a space-available basis.

The enrolled population of the GOPC FE experienced a wide range of visits and percentage of visits throughout the year. August posted the highest number of visits while September posted the highest percentage of visits primarily due the summer utilization trends ending and a lack of appointments in the GOPC. The Re-engineering Initiative resulted in a significant drop in visits and a similar percentage of total visits.

From November 1998 through March 1999 the enrolled PEDS population had a trend that was again clearly defined by the pediatrician that retired in December as the number and percentage of visits for that period were significantly higher than the yearly mean. April 1999

reflected the total 0 – 14 population and was again affected by the loss of the pediatrician and the ongoing hiring action for a replacement. Visits were decreased as referrals to family practice providers in the GOPC increased.

For the year studied, TP FT E, which is contracted to Sentara Health Systems, had five of the last six months above the yearly mean. This can be partially attributed to the seasonal trends previously discussed; however, it is suspected that appointments for that clinic are overbooked. These overbooked appointments are thought to occur in the early evening, and as a result patients are diverted to the UCC where they will have to be seen. This information is proprietary and cannot be proven, but actual patient reports and the collected data show that this may be occurring. The Re-engineering Initiative did, however, result in a decrease in the number of visits to the UCC. If a patient enrolled to TP FT E presented (between 0700 and 2000) for treatment in the UCC and was triaged as a 4 or 5, the patient was referred back to that clinic for care. This helped to reduce visits by 31.8 percent, however, the percentage of total visits increased slightly.

The “Other” category of enrollees maintained a steady range of visits throughout the year, and appeared to be affected by the same utilization trends that impacted the other categories. This population was affected by the Re-engineering Initiative in a manner similar to the other enrolled populations.

The arrival times of the patients for the 0700 – 1459 shift appeared to have no major significant trends, however, August had the highest percentage of visits for that shift and can be attributed to the number of active duty that report to sick call during that time frame. July, on the other hand, reported the lowest numbers of visits with 581 and the second lowest percentage of visits with 38.2 percent. This can partially be attributed to seasonal trends as

summer vacations and the longer hours of daylight have people accessing their health care needs after appointments have closed leaving the UCC as the only clinic where care can be accessed. This reflects in the July 1500 – 2259 shift, which has the second highest percentage of visits for the year. The range in the 1500 – 2259 shift was even less than the 0700 – 1459 shift as November (47.1 percent) and December (41.2 percent) posted the highest and lowest percentage of visits for the year, with December having the lowest actual number of visits for the year. The holiday season contributes to this anomaly as families take vacations, children are off from school and service members have a varying holiday schedule. The 2300 – 0659 shift had a very small range and is normally accessed by beneficiaries who feel their medical condition warrants treatment immediately or by non-enrollees who have limited access to appointments during the day and know they will be seen in the UCC. There is no particular trend that dictates which month was higher than another, but the cold and flu season following the holidays had the first and third highest totals for the year.

The Re-engineering Initiative had a significant impact on when patients presented to the UCC. Arrival times for the 0700 – 1459 experienced a tremendous reduction in both overall visits and percentage of total visits. This can be attributed to the increase in the number of GOPC appointments that were made available. Patients that presented during this time were able to obtain an appointment in the GOPC due to the fact that providers that would have normally been performing their duties in the UCC under the previous system were now available for appointments. Conversely, the 1500 – 2259 shift, experienced an almost 11 percent increase in percentage of total visits, although actual number of visits decreased 22.6 percent. This can be attributed to the Re-engineering Initiative itself. Because the Initiative was a new program, there were some growing pains associated with the first month of

implementation. As a result, the additional appointments that were created for this time period were booked very quickly. Patients without appointments were left with the UCC as the only means of accessing their care. Once this problem was identified, more appointments were added. The data however, covers the whole month and this initial problem is included in the totals. The 2300 – 0659 shift experienced a reduction in total visits but had a significant increase in the percentage of total visits. Again, the Re-engineering Initiative being a new program contributed to this trend. Change of any kind is difficult, and the habits of beneficiaries are somewhat etched in stone. The population that normally accesses the UCC during this shift is not going to alter their habits immediately. It is going to take time and education to convince these beneficiaries that there is access available during the day and evening and appointments are available. It is expected that as the Re-engineering Initiative progresses, less and less utilization of the UCC will occur during this shift.

Patient acuity is one of the primary factors that led to this study being conducted. With 86.8 percent of visits for the year studied, it was obvious that these patients belonged in a primary care setting rather than an urgent care environment. Patient acuity is determined by the triage nurse and is subjective, based on the protocols developed by the department and the medical expertise of the individual nurse. These protocols only give guidelines and do not cover every possible medical scenario. The only possible explanations for why April and May 1998 had such significantly higher emergent numbers than the rest of the year studied is either the subjectivity of the triage nurses or there were just simply more emergencies. The urgent cases did not experience any significant trend for the year; however, the last three months of the year all steadily declined to a yearly low of 151 visits and 7.7 percent of the visits in March 1999. The non-urgent category comprised the majority of visits to the UCC

for the year studied, but had no significant trends as to when or what time these patients would present. As less and less appointments were available in the GOPC and as the cold and flu season arrived, more and more patients were forced to use the UCC for their primary care needs, even though their condition did not warrant a UCC visit.

For the comparison month of April 1999, patient acuity was significantly affected by the Re-engineering Initiative. Emergent cases were virtually non-existent with only the one case for the month. Again, triage nurse subjectivity plays a major role in determining patient status. The urgent and non-urgent cases experienced the most impact as urgent cases rose in both total numbers and percentage of total visits while non-urgent cases dropped almost in half in actual numbers and by 16.3 percent for the percentage of visits. The very heart of the Re-engineering Initiative explains this trend, which is to treat patients in the appropriate environment. In the original system all patients were treated in the UCC unless they had a GOPC appointment. With the Initiative, the triage process determines where the patient will receive their care. The non-urgent numbers and percentages dropped because many of these patients that would have been treated under the old system in the UCC were given appointments in the GOPC because their condition did not warrant an urgent care environment.

The hourly patient flow data which is displayed in tabular format in Appendices E1 through E3 or in graph format in Appendices F1 through F16 further breaks down the data for arrival times that was described in the previous section. For the year, the 1800 – 1900 period experienced the greatest patient flow primarily because this is the time that beneficiaries, both adults and children, have begun to feel ill during the day and decide they need care after they finish work or get home from school. The second peak for the year occurred between 0900

and 1000 and can be attributed to beneficiaries who have awoke feeling ill and made the decision to access care in lieu of going to work or school. Following the morning peak at 0900, there is a slight decline until 1300 where again a minor increase occurred. This can be attributed to beneficiaries who have gone to school or work in the morning, possibly somewhat ill already, and have been too ill to finish their day. An afternoon lull occurs at 1400 followed by a steady increase to the peak at 1800, which was earlier described. In the nine hours following 1800, there is a significant reduction in the numbers of patients that present to the UCC simply because as the evening progresses, it becomes more and more of an inconvenience for patients to access care, unless they are truly emergent or urgent. The numbers start to pick up again slightly at 0400 and 0500 with a larger increase occurring as the peak hour of 0900 draws closer. The arrival times for each of the separate months studied can be attributed to the trends that have been discussed in this section. Although each month varied somewhat and had their particular anomalies, the overall yearly trends compare similarly for each of the separate months. The Re-engineering Initiative greatly impacted the hourly flow of patients as only three hours experienced increases from the original system. There was a tremendous reduction in the number of visits beginning at 0700 and continuing 1900 due to the increased number of appointments created in the GOPC. The hours from 1900 to 0700 experienced a slight decrease, except for the three minor increases, but not as significant. The Re-engineering Initiative did not affect the patient flow for these hours of the day as greatly, primarily because of fewer patients actually accessing care during those times.

Looking back at the hypothesis, which states: UCC utilization by MACH Prime 1 enrollees will decrease as a result of the re-engineering process, it can definitely be said that this in fact did occur. These patients were able to access appointments in the appropriate

environment of care, which was not only beneficial to the patient but also allowed the providers to begin to establish improved continuity of care.

Conclusion and Recommendations

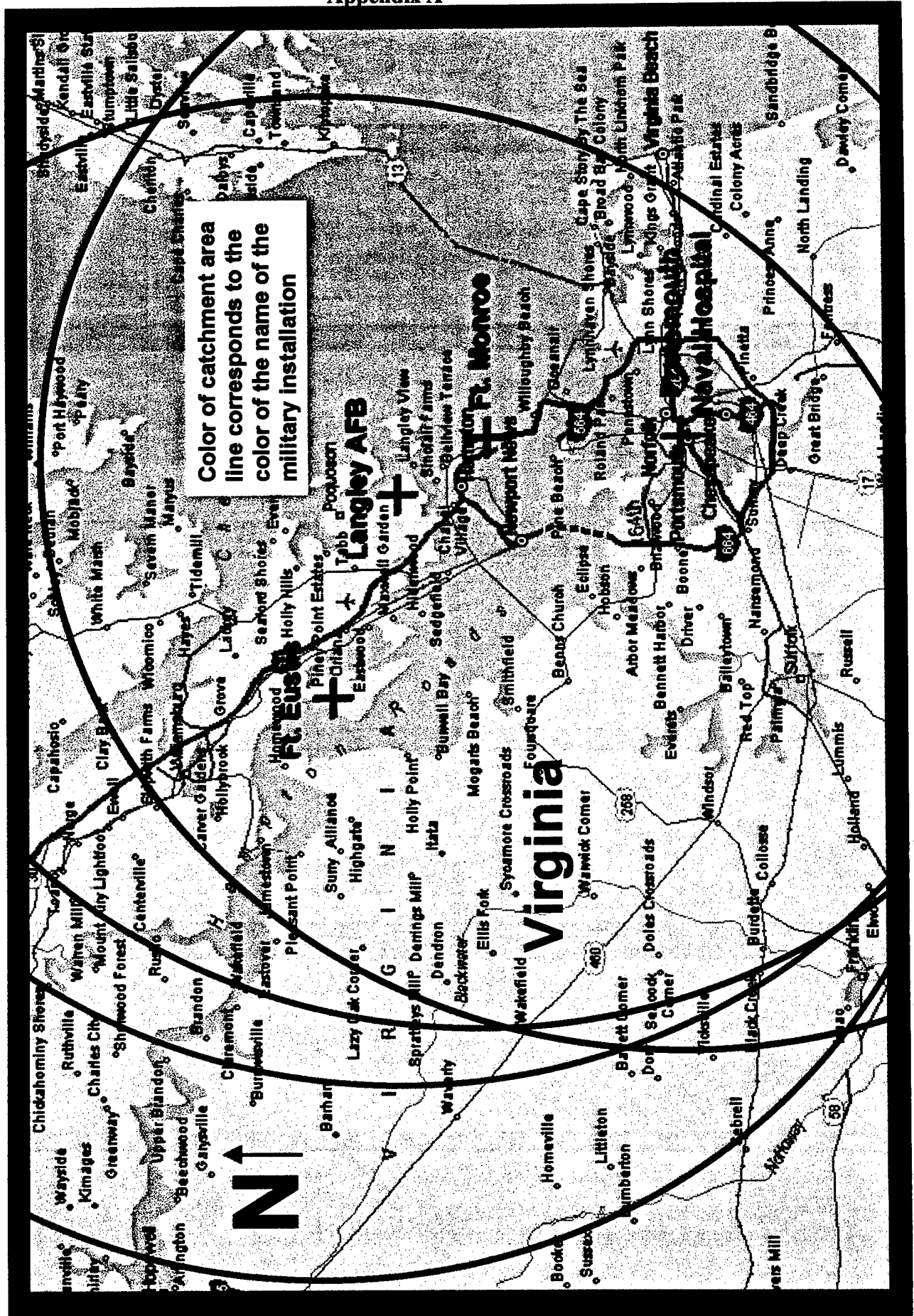
Overall, MACH Prime 1, which includes PEDS and GOPC FE, reduced their visits by a combined 34.3 percent and experienced a drop of 352 visits over the April 1998 to March 1999 yearly average. Additionally, the tremendous number and percentage of non-urgent patients was reduced by 746 visits, which equates to 48.3 percent.

The data collected for this study provided a tremendous opportunity to look at many different aspects of UCC utilization. The study attempted to look at a cross section of the population using the UCC, where they were enrolled, what time they presented and what acuity did they present with. It would have been more beneficial to continue collecting comparison data for a longer period of time, but the time constraints placed on this project made it impossible. With such a broad scope of data available, it was difficult to focus on which demographic categories to use. There were so many other categories and combinations of raw data available, that opportunities for other studies to branch off from this data are numerous.

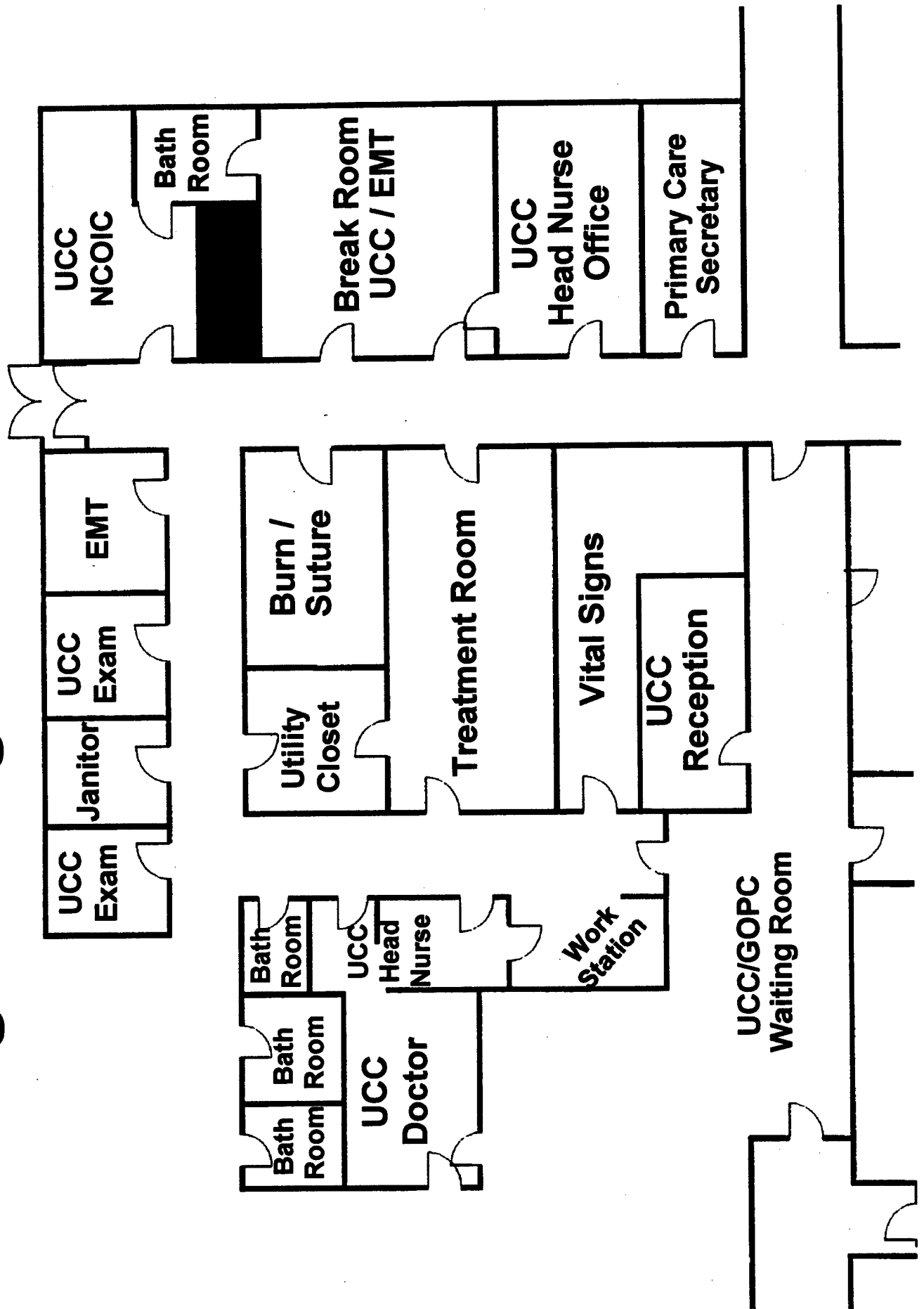
It is very likely that as the Re-engineering Initiative matures and patients become better educated to the process, the numbers of beneficiaries that utilize the UCC will continue to dwindle. Although the UCC is a convenient service for beneficiaries, it is by no means an emergency room. It is very difficult to justify the existence and expense of a clinic such as the UCC when the services that are provided are duplicated in the GOPC. There is, however, an individual case now and then when the UCC probably made the difference between life and death, but the cases are very few and very far between. In those cases where the patient is

truly emergent, the UCC simply cannot provide the scope of care necessary to properly care for patients in this category. The UCC should not be operated like an emergency room and unless it is converted into what it is operating as, it should be closed.

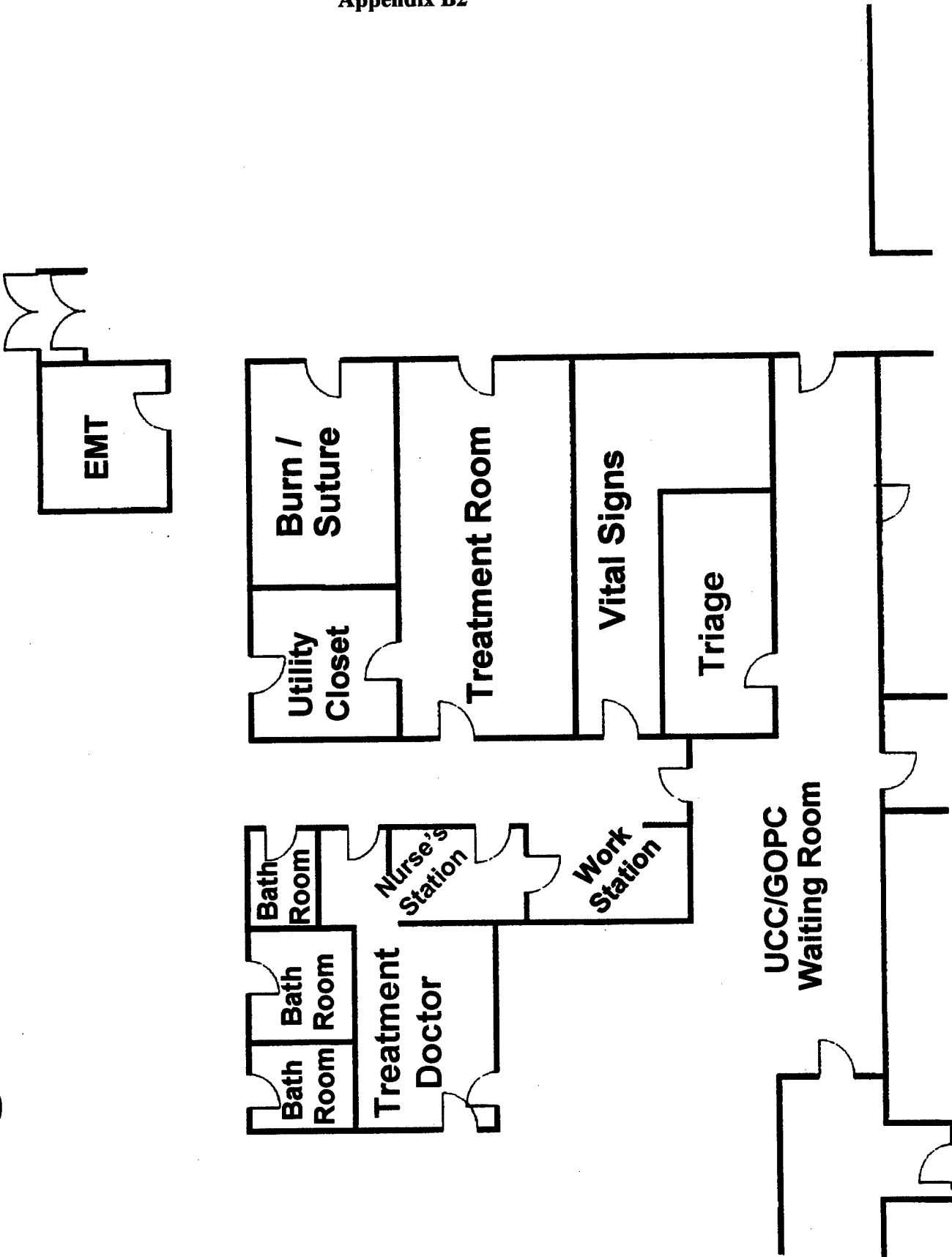
CATCHMENT AREAS



Original Urgent Care Center

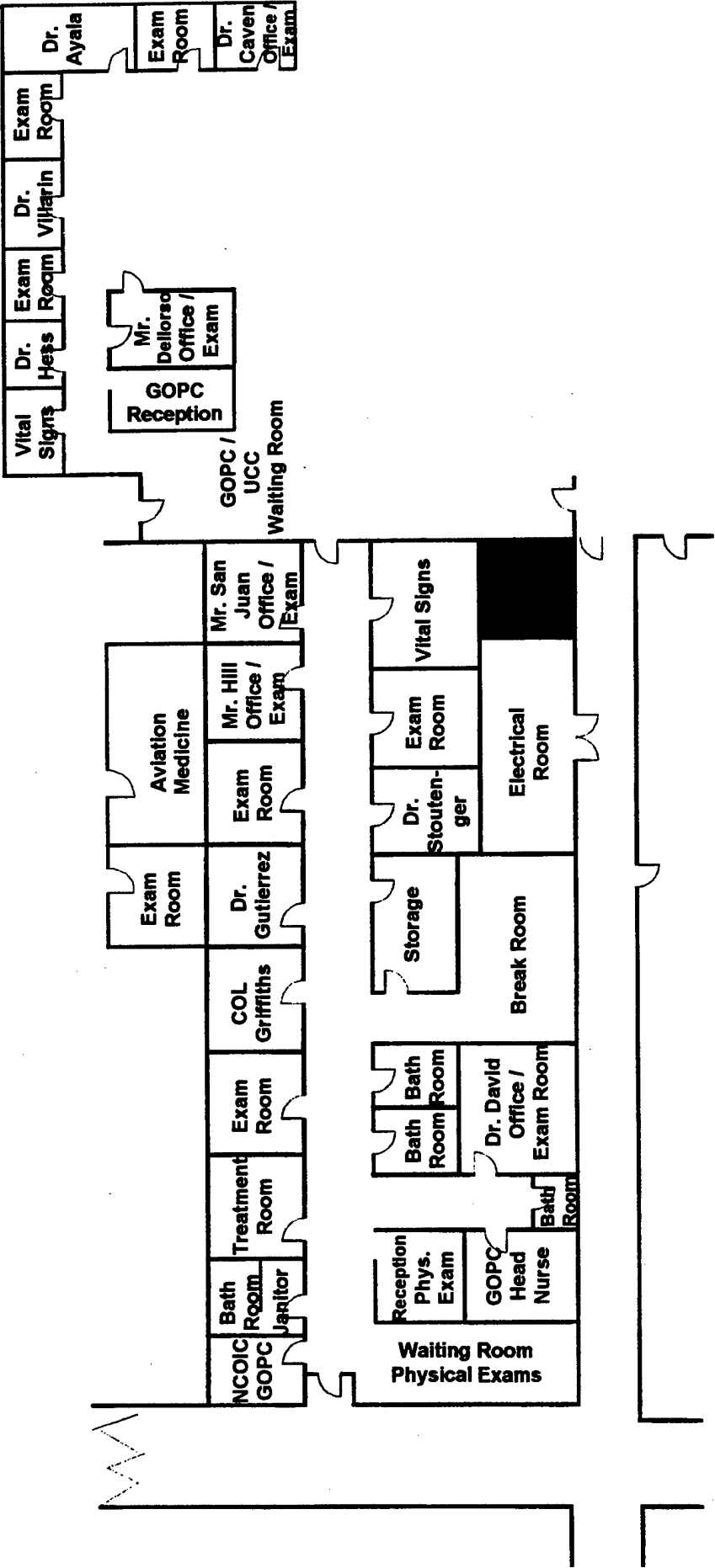


Re-engineered Urgent Care Center



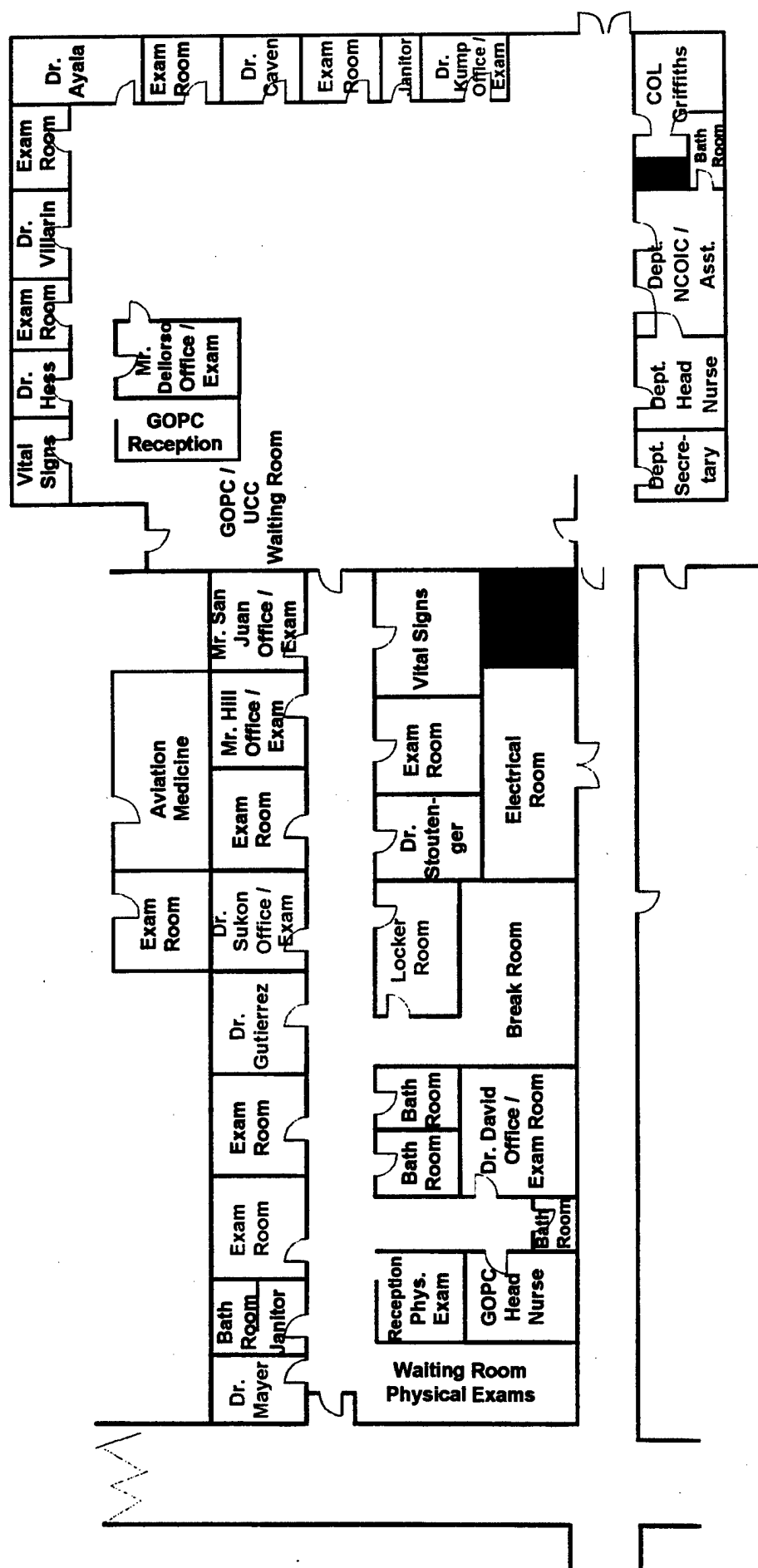
Appendix C1

Original GOPC



Appendix C2

Re-engineered GOPC



Appendix D1

Month	Total Visits	Total Male	%	Total Female	%	Total Active Duty	%	Total Age < 14	%	Total Age 14 - 64	%	Total Age > 64	%
Apr 98	1,648	820	49.8	828	50.2	519	31.5	430	26.1	1,181	71.7	37	2.2
May 98	1,672	844	50.5	828	49.5	510	30.5	435	26.0	1,201	71.8	36	2.2
Jun 98	1,600	811	50.7	789	49.3	435	27.2	372	23.3	1,178	73.6	50	3.1
Jul 98	1,522	746	49.0	776	51.0	476	31.3	376	24.7	1,107	72.7	39	2.6
Aug 98	1,547	803	51.9	744	48.1	539	34.8	340	22.0	1,163	75.2	44	2.8
Sep 98	1,709	905	53.0	804	47.0	630	36.9	417	24.4	1,256	73.5	36	2.1
Oct 98	1,653	856	51.8	797	48.2	496	30.0	452	27.3	1,158	70.1	43	2.6
Nov 98	1,529	759	49.6	770	50.4	388	25.4	504	33.0	990	64.7	35	2.3
Dec 98	1,537	779	50.7	758	49.3	399	26.0	510	33.2	992	64.5	35	2.3
Jan 99	1,751	902	51.5	849	48.5	493	28.2	583	33.3	1,134	64.8	34	1.9
Feb 99	1,744	824	47.2	920	52.8	426	24.4	687	39.4	1,023	58.7	34	1.9
Mar 99	1,969	973	49.4	996	50.6	520	26.4	732	37.2	1,202	61.0	35	1.8
12 Mo. Total	19,881	10,022		9,859		5,831		5,838		13,585		458	
Ave / Month	1,656.8	835.2	50.4	821.6	49.6	485.9	29.3	486.5	29.1	1,132.1	68.5	38.2	2.3
Range	1,522 - 1,969	746 - 973	47.2 - 53.0	744 - 996	47.0 - 52.8	388 - 630	24.4 - 36.9	340 - 732	22.0 - 39.4	990 - 1,256	58.7 - 75.2	34 - 50	1.8 - 3.1
Median	1,650.5	822.0	50.6	800.5	49.4	494.5	29.1	443.5	26.7	1,160.5	70.9	36.0	2.3
Std Dev	122.86	63.07	1.47	69.35	1.47	64.54	3.68	118.77	5.54	83.40	5.27	4.78	0.38
Apr 99	1,027	522	50.8	505	49.2	302	29.4	331	37.2	680	61.0	16	1.8
Delta Δ	(629.8)	(313.2)	0.4	(316.6)	(0.4)	(183.9)	0.1	(155.5)	8.0	(452.1)	(7.5)	(22.2)	(0.5)
% Delta Δ	(38.0)	(37.5)	0.8	(38.5)	(0.8)	(37.8)	0.3	(32.0)	21.6	(39.9)	(10.9)	(58.1)	(23.5)

Appendix D2

Month	Total Enrolled	%	Total Non-Enrolled	%	GOPC FE Enrolled	%	PEDS Enrolled	%	TP FT E Enrolled	%	Other Enrolled	%
Apr 98	940	57.0	708	43.0	380	23.1	127	7.7	306	18.6	127	7.7
May 98	955	57.1	717	42.9	373	22.3	123	7.4	314	18.8	145	8.7
Jun 98	826	51.6	774	48.4	270	16.9	128	8.0	299	18.7	129	8.1
Jul 98	876	57.6	646	42.4	324	21.3	98	6.4	306	20.1	148	9.7
Aug 98	922	59.6	625	40.4	397	25.7	127	8.2	295	19.1	103	6.7
Sep 98	1,067	62.4	642	37.6	430	25.2	153	9.0	338	19.8	146	8.5
Oct 98	1,001	60.6	652	39.4	329	19.9	160	9.7	376	22.7	136	8.2
Nov 98	974	63.7	555	36.3	276	18.1	213	13.9	365	23.9	120	7.8
Dec 98	991	64.5	546	35.5	323	21.0	216	14.1	316	20.6	136	8.8
Jan 99	1,134	64.8	617	35.2	336	19.2	246	14.0	400	22.8	152	8.7
Feb 99	1,168	67.0	576	33.0	314	18.0	280	16.1	417	23.9	157	9.0
Mar 99	1,302	66.1	667	33.9	406	20.6	323	16.4	420	21.3	153	7.8
12 Mo. Total	12,156		7,725		4,158		2,194		4,152		1,652	
Ave / Month	1,013.0	61.0	643.8	39.0	346.5	20.9	182.8	10.9	346.0	20.9	137.7	8.3
Range	826 - 1,302	51.6 - 67.0	546 - 774	33.0 - 48.4	270 - 430	16.9 - 25.7	98 - 323	6.4 - 16.4	295 - 420	18.6 - 23.9	103 - 157	6.7 - 9.0
Median	982.5	61.5	644.0	38.5	332.5	20.8	156.5	9.3	327.0	20.3	140.5	8.4
Std Dev	128.44	4.38	64.66	4.38	48.51	2.65	68.63	3.53	45.36	1.95	15.15	0.75
Apr 99	686	66.8	341	33.2	221	21.5	131	12.8	236	23.0	98	9.5
Delta Δ	(327.0)	5.8	(302.8)	(5.8)	(125.5)	0.6	(51.8)	1.9	(110.0)	2.1	(39.7)	1.2
% Delta Δ	(32.3)	8.7	(47.0)	(14.9)	(36.2)	2.7	(28.4)	14.5	(31.8)	9.2	(28.8)	12.9

Appendix D3

Month	Arr. Time 0700-1459	%	Arr. Time 1500-2259	%	Arr. Time 2300-0659	%	Total Energy	%	Total Tons	%	Total Non- Tons	%
Apr 98	700	42.5	726	44.1	221	13.4	21	1.3	256	15.5	1,371	83.2
May 98	735	44.4	722	43.2	216	12.9	18	1.1	296	17.7	1,358	81.2
Jun 98	670	41.9	723	45.2	207	12.9	6	0.4	226	14.1	1,368	85.5
Jul 98	581	38.2	707	46.5	234	15.4	1	0.1	168	11.0	1,353	88.9
Aug 98	715	46.2	641	41.4	191	12.3	4	0.3	194	12.5	1,349	87.2
Sep 98	712	41.7	731	42.8	266	15.6	5	0.3	183	10.7	1,521	89.0
Oct 98	657	39.7	758	45.9	238	14.4	3	0.2	193	11.7	1,457	88.1
Nov 98	582	38.1	720	47.1	227	14.8	5	0.3	239	15.6	1,285	84.0
Dec 98	664	43.2	633	41.2	240	15.6	2	0.1	195	12.7	1,340	87.2
Jan 99	750	42.8	734	41.9	267	15.2	4	0.2	244	13.9	1,503	85.8
Feb 99	754	43.2	778	44.6	212	12.2	1	0.1	175	10.0	1,568	89.9
Mar 99	871	44.2	841	42.7	257	13.1	3	0.2	151	7.7	1,815	92.2
12 Mo. Total	8,391		8,714		2,776		73		2,520		17,288	
Ave / Month	699.3	42.2	726.2	43.9	231.3	14.0	6.1	0.4	210.0	12.8	1,440.7	86.8
Range	581 - 871	38.1 - 46.2	633 - 841	41.2 - 47.1	191 - 267	12.2 - 15.6	1 - 21	0.1 - 1.3	151 - 296	7.7 - 17.7	1,285 - 1,815	81.2 - 92.2
Median	706.0	42.7	724.5	43.6	230.5	13.9	4.0	0.2	194.5	12.6	1,369.5	87.2
Std Dev	75.48	2.37	52.71	1.90	22.75	1.26	6.21	0.38	40.55	2.67	139.75	2.95
Apr 99	273	26.6	562	54.7	192	18.7	1	0.1	280	27.3	746	72.6
Delta Δ	(426.3)	(15.6)	(164.2)	10.9	(39.3)	4.7	(5.1)	(0.3)	70.0	14.5	(694.7)	(14.2)
% Delta Δ	(61.0)	(37.0)	(22.6)	19.8	(17.0)	25.2	(83.6)	(73.6)	25.0	53.1	(48.2)	(16.3)

Appendix E1

Time	Apr-98	%	/HR	May-98	%	/HR	Jun-98	%	/HR	Jul-98	%	/HR	Aug-98	%	/HR
0600 - 0659	42	2.5	1.40	47	2.8	1.52	29	1.8	0.97	31	2.0	1.00	32	2.1	1.07
0700 - 0759	81	4.9	2.70	68	4.1	2.19	64	4.0	2.13	56	3.7	1.81	57	3.7	1.90
0800 - 0859	80	4.9	2.67	84	5.0	2.71	75	4.7	2.50	63	4.1	2.03	110	7.1	3.67
0900 - 0959	109	6.6	3.63	104	6.2	3.35	85	5.3	2.83	68	4.5	2.19	103	6.7	3.43
1000 - 1059	100	6.1	3.33	107	6.4	3.45	99	6.2	3.30	79	5.2	2.55	90	5.8	3.00
1100 - 1159	71	4.3	2.37	91	5.4	2.94	87	5.4	2.90	74	4.9	2.39	98	6.3	3.27
1200 - 1259	82	5.0	2.73	96	5.7	3.10	68	4.3	2.27	90	5.9	2.90	80	5.2	2.67
1300 - 1359	92	5.6	3.07	98	5.9	3.16	101	6.3	3.37	82	5.4	2.65	91	5.9	3.03
1400 - 1459	85	5.2	2.83	86	5.1	2.77	91	5.7	3.03	69	4.5	2.23	86	5.6	2.87
1500 - 1559	92	5.6	3.07	88	5.3	2.84	89	5.6	2.97	84	5.5	2.71	88	5.7	2.93
1600 - 1659	90	5.5	3.00	85	5.1	2.74	94	5.9	3.13	81	5.3	2.61	90	5.8	3.00
1700 - 1759	98	5.9	3.27	89	5.3	2.87	96	6.0	3.20	98	6.4	3.16	76	4.9	2.53
1800 - 1859	91	5.5	3.03	97	5.8	3.13	103	6.4	3.43	119	7.8	3.84	100	6.5	3.33
1900 - 1959	110	6.7	3.67	114	6.8	3.68	98	6.1	3.27	91	6.0	2.94	87	5.6	2.90
2000 - 2059	103	6.3	3.43	109	6.5	3.52	87	5.4	2.90	74	4.9	2.39	79	5.1	2.63
2100 - 2159	81	4.9	2.70	80	4.8	2.58	96	6.0	3.20	88	5.8	2.84	65	4.2	2.17
2200 - 2259	61	3.7	2.03	60	3.6	1.94	60	3.8	2.00	72	4.7	2.32	56	3.6	1.87
2300 - 2359	44	2.7	1.47	48	2.9	1.55	47	2.9	1.57	59	3.9	1.90	30	1.9	1.00
0000 - 0059	27	1.6	0.90	27	1.6	0.87	38	2.4	1.27	39	2.6	1.26	27	1.7	0.90
0100 - 0159	28	1.7	0.93	22	1.3	0.71	37	2.3	1.23	32	2.1	1.03	24	1.6	0.80
0200 - 0259	25	1.5	0.83	22	1.3	0.71	11	0.7	0.37	14	0.9	0.45	14	0.9	0.47
0300 - 0359	12	0.7	0.40	18	1.1	0.58	18	1.1	0.60	21	1.4	0.68	19	1.2	0.63
0400 - 0459	18	1.1	0.60	15	0.9	0.48	15	0.9	0.50	16	1.1	0.52	23	1.5	0.77
0500 - 0559	26	1.6	0.87	17	1.0	0.55	12	0.8	0.40	22	1.4	0.71	22	1.4	0.73
Total	1,648	100.0		1,672	100.0		1,600	100.0		1,522	100.0		1,547	100.0	
Ave / Day	54.9			53.9			53.3			49.1			51.6		
Ave / Hour			2.29			2.25			2.22			2.05			2.15

Using April as an example to explain the figures, the 1,648 represents total UCC visits for the month. The 100.0 represents the total sum of the percentages that each hour comprises. For example, 26 of the 1,648 total visits from 0500 - 0559 represents 1.6 percent of the visits for that month ($26 / 1,648 = 1.6\%$). Further, the 0.87 represents the average patient flow per hour for the month (26 visits / 30 - 0500 to 0559 periods in the month = 0.87). The 54.9 represents the average number of patients per day for each day of that month (1,648 / 30 days in April = 54.9), and the 2.29 represents the average number of patients per hour for that month (54.9 / 24 hrs = 2.29).

Appendix E2

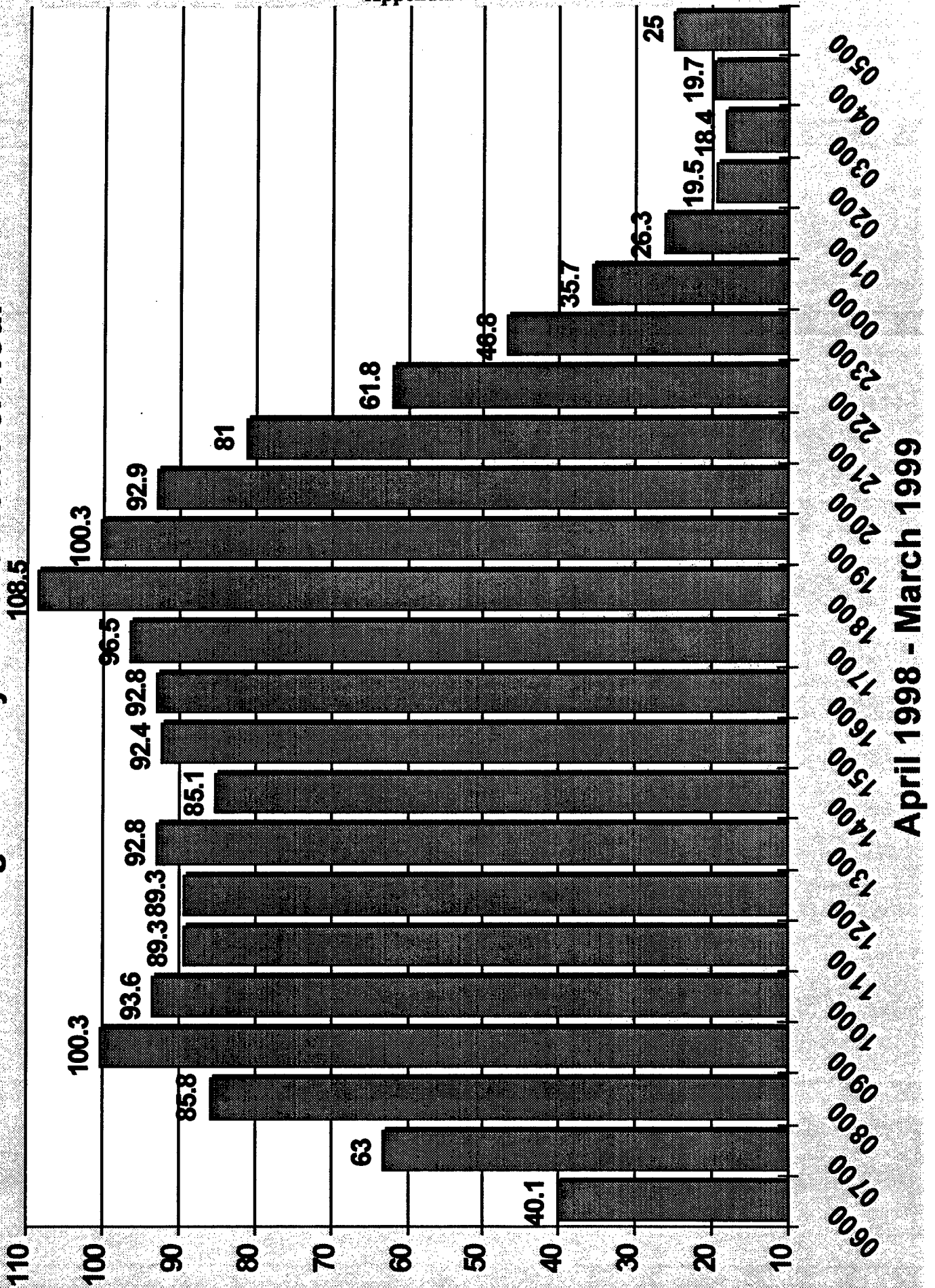
Time	Sep-98	%	/ HR	Oct-98	%	/ HR	Nov-98	%	/ HR	Dec-98	%	/ HR	Jan-99	%	/ HR
0600 - 0659	57	3.3	1.90	51	3.1	1.65	30	2.0	1.00	42	2.7	1.35	34	1.9	1.10
0700 - 0759	66	3.9	2.20	57	3.4	1.84	43	2.8	1.43	58	3.8	1.87	72	4.1	2.32
0800 - 0859	101	5.9	3.37	77	4.7	2.48	78	5.1	2.60	85	5.5	2.74	76	4.3	2.45
0900 - 0959	98	5.7	3.27	91	5.5	2.94	82	5.4	2.73	86	5.6	2.77	110	6.3	3.55
1000 - 1059	93	5.4	3.10	98	5.9	3.16	76	5.0	2.53	78	5.1	2.52	100	5.7	3.23
1100 - 1159	90	5.3	3.00	86	5.2	2.77	79	5.2	2.63	94	6.1	3.03	108	6.2	3.48
1200 - 1259	86	5.0	2.87	91	5.5	2.94	87	5.7	2.90	85	5.5	2.74	103	5.9	3.32
1300 - 1359	89	5.2	2.97	84	5.1	2.71	75	4.9	2.50	94	6.1	3.03	92	5.3	2.97
1400 - 1459	89	5.2	2.97	73	4.4	2.35	62	4.1	2.07	84	5.5	2.71	89	5.1	2.87
1500 - 1559	92	5.4	3.07	99	6.0	3.19	92	6.0	3.07	77	5.0	2.48	78	4.5	2.52
1600 - 1659	80	4.7	2.67	96	5.8	3.10	118	7.7	3.93	83	5.4	2.68	92	5.3	2.97
1700 - 1759	84	4.9	2.80	87	5.3	2.81	95	6.2	3.17	80	5.2	2.58	112	6.4	3.61
1800 - 1859	106	6.2	3.53	132	8.0	4.26	108	7.1	3.60	91	5.9	2.94	108	6.2	3.48
1900 - 1959	100	5.9	3.33	120	7.3	3.87	92	6.0	3.07	77	5.0	2.48	94	5.4	3.03
2000 - 2059	115	6.7	3.83	92	5.6	2.97	91	6.0	3.03	78	5.1	2.52	98	5.6	3.16
2100 - 2159	94	5.5	3.13	72	4.4	2.32	74	4.8	2.47	72	4.7	2.32	85	4.9	2.74
2200 - 2259	60	3.5	2.00	60	3.6	1.94	50	3.3	1.67	75	4.9	2.42	67	3.8	2.16
2300 - 2359	44	2.6	1.47	42	2.5	1.35	58	3.8	1.93	48	3.1	1.55	49	2.8	1.58
0000 - 0059	49	2.9	1.63	30	1.8	0.97	40	2.6	1.33	42	2.7	1.35	51	2.9	1.65
0100 - 0159	27	1.6	0.90	23	1.4	0.74	25	1.6	0.83	29	1.9	0.94	24	1.4	0.77
0200 - 0259	26	1.5	0.87	27	1.6	0.87	13	0.9	0.43	23	1.5	0.74	24	1.4	0.77
0300 - 0359	16	0.9	0.53	23	1.4	0.74	16	1.0	0.53	12	0.8	0.39	28	1.6	0.90
0400 - 0459	20	1.2	0.67	15	0.9	0.48	22	1.4	0.73	18	1.2	0.58	23	1.3	0.74
0500 - 0559	27	1.6	0.90	27	1.6	0.87	23	1.5	0.77	26	1.7	0.84	34	1.9	1.10
Total	1,709	100.0		1,653	100.0		1,529	100.0		1,537	100.0		1,751	100.0	
Ave / Day	57.0			53.3			51.0			49.6			56.5		
Ave / Hour			2.37			2.22			2.12			2.07			2.35

Time	Feb-99	%	/HR	Mar-99	%	/HR	Year Total	%	Yr Ave /Mo/Hr	Yr Ave /Day/Hr	Apr-99	%	/HR	Delta	% Delta
0600 - 0659	31	1.8	1.11	55	2.79	1.77	481	2.42	40.1	1.32	35	3.41	1.17	(5.1)	(12.7)
0700 - 0759	55	3.2	1.96	79	4.01	2.55	756	3.80	63.0	2.08	29	2.82	0.97	(34.0)	(54.0)
0800 - 0859	79	4.5	2.82	121	6.15	3.90	1,029	5.18	85.8	2.83	21	2.04	0.70	(64.8)	(75.5)
0900 - 0959	118	6.8	4.21	150	7.62	4.84	1,204	6.06	100.3	3.31	32	3.12	1.07	(68.3)	(68.1)
1000 - 1059	102	5.8	3.64	101	5.13	3.26	1,123	5.65	93.6	3.09	43	4.19	1.43	(50.6)	(54.1)
1100 - 1159	99	5.7	3.54	95	4.82	3.06	1,072	5.39	89.3	2.95	35	3.41	1.17	(54.3)	(60.8)
1200 - 1259	102	5.8	3.64	101	5.13	3.26	1,071	5.39	89.3	2.94	42	4.09	1.40	(47.3)	(52.9)
1300 - 1359	96	5.5	3.43	120	6.09	3.87	1,114	5.60	92.8	3.06	33	3.21	1.10	(59.8)	(64.5)
1400 - 1459	103	5.9	3.68	104	5.28	3.35	1,021	5.14	85.1	2.81	38	3.70	1.27	(47.1)	(55.3)
1500 - 1559	109	6.3	3.89	121	6.15	3.90	1,109	5.58	92.4	3.05	36	3.51	1.20	(56.4)	(61.0)
1600 - 1659	101	5.8	3.61	103	5.23	3.32	1,113	5.60	92.8	3.06	44	4.28	1.47	(48.8)	(52.6)
1700 - 1759	112	6.4	4.00	131	6.65	4.23	1,158	5.82	96.5	3.19	62	6.04	2.07	(34.5)	(35.8)
1800 - 1859	114	6.5	4.07	133	6.75	4.29	1,302	6.55	108.5	3.58	89	8.67	2.97	(19.5)	(18.0)
1900 - 1959	113	6.5	4.04	108	5.49	3.48	1,204	6.06	100.3	3.31	97	9.44	3.23	(3.3)	(3.3)
2000 - 2059	86	4.9	3.07	103	5.23	3.32	1,115	5.61	92.9	3.06	98	9.54	3.27	5.1	5.5
2100 - 2159	79	4.5	2.82	86	4.37	2.77	972	4.89	81.0	2.67	72	7.01	2.40	(9.0)	(11.1)
2200 - 2259	64	3.7	2.29	56	2.84	1.81	741	3.73	61.8	2.04	64	6.23	2.13	2.3	3.6
2300 - 2359	48	2.8	1.71	44	2.23	1.42	561	2.82	46.8	1.54	41	3.99	1.37	(5.8)	(12.3)
0000 - 0059	22	1.3	0.79	36	1.83	1.16	428	2.15	35.7	1.17	34	3.31	1.13	(1.7)	(4.7)
0100 - 0159	23	1.3	0.82	22	1.12	0.71	316	1.59	26.3	0.87	18	1.75	0.60	(8.3)	(31.6)
0200 - 0259	17	1.0	0.61	18	0.91	0.58	234	1.18	19.5	0.64	14	1.36	0.47	(5.5)	(28.2)
0300 - 0359	17	1.0	0.61	21	1.07	0.68	221	1.11	18.4	0.61	20	1.95	0.67	1.6	8.6
0400 - 0459	22	1.3	0.79	29	1.47	0.94	236	1.19	19.7	0.65	11	1.07	0.37	(8.7)	(44.1)
0500 - 0559	32	1.8	1.14	32	1.63	1.03	300	1.51	25.0	0.83	19	1.85	0.63	(6.0)	(24.0)
Total	1,744	100.0		1,969	100.0		19,881	100.0	1,656.8	54.47	1,027	100.0		(629.8)	
Ave / Day	62.3			63.5			1,656.8				33.13				
Ave / Hour			2.60			2.65			2.27				1.38		

The yearly totals are the summation of the monthly totals. For example, from 0500 to 0559 there were 300 visits to the UCC for the year. This averages out to 25 patients per month per hour for that time frame (300 / 12 months = 25). Further broken down, 0.83 patients can be expected in the UCC per day for that same time period and is derived by summing each of the monthly totals of that same category and dividing by 12 months (sum of 12 months = 9.91 / 12 = 0.83). The 19,881 represents the total number of visits to the UCC for the 12 month period of the study. The 1,656.8 is the average visits per month for the year (19,881 / 12 months = 1,656.8). The 54.47 is the average number of patients per day for the year (19,881 / 365 = 54.47). The 2.27 represents the average number of patients per day per hour (54.47 / 24 hrs = 2.27).

Appendix F1

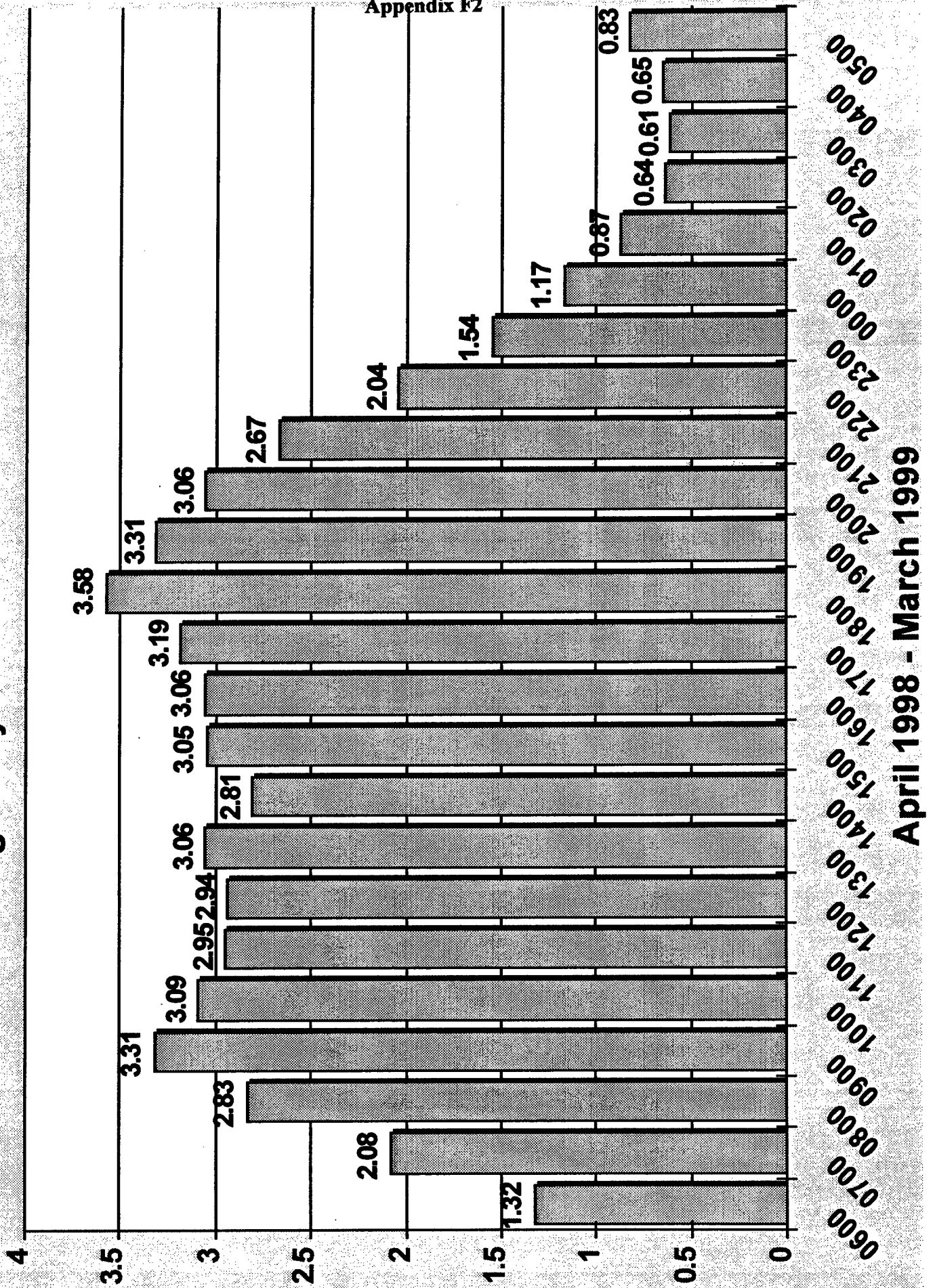
Average Monthly Patient Flow Per Hour



April 1998 - March 1999

Appendix F2

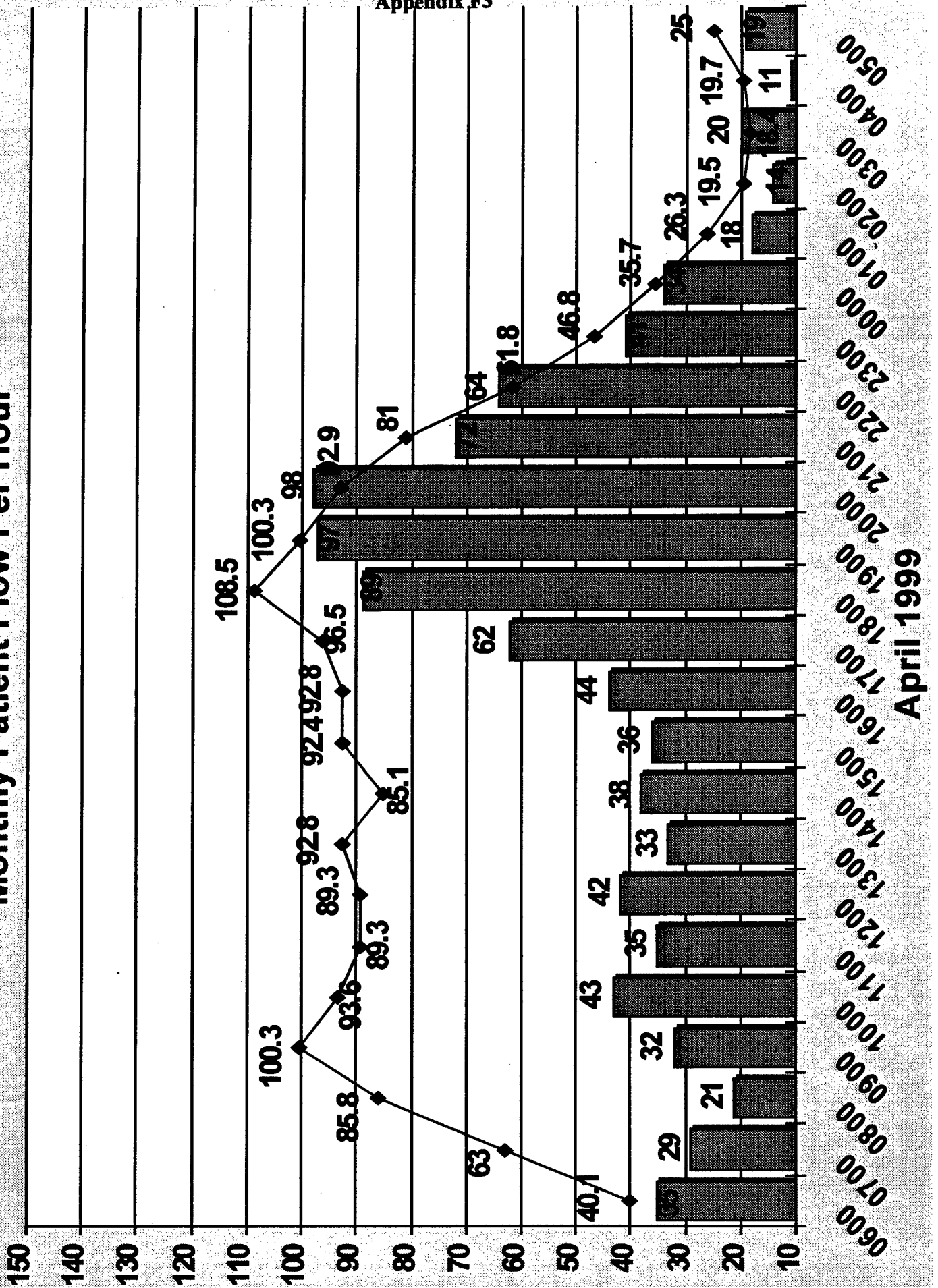
Average Daily Patient Flow Per Hour



April 1998 - March 1999

Appendix F3

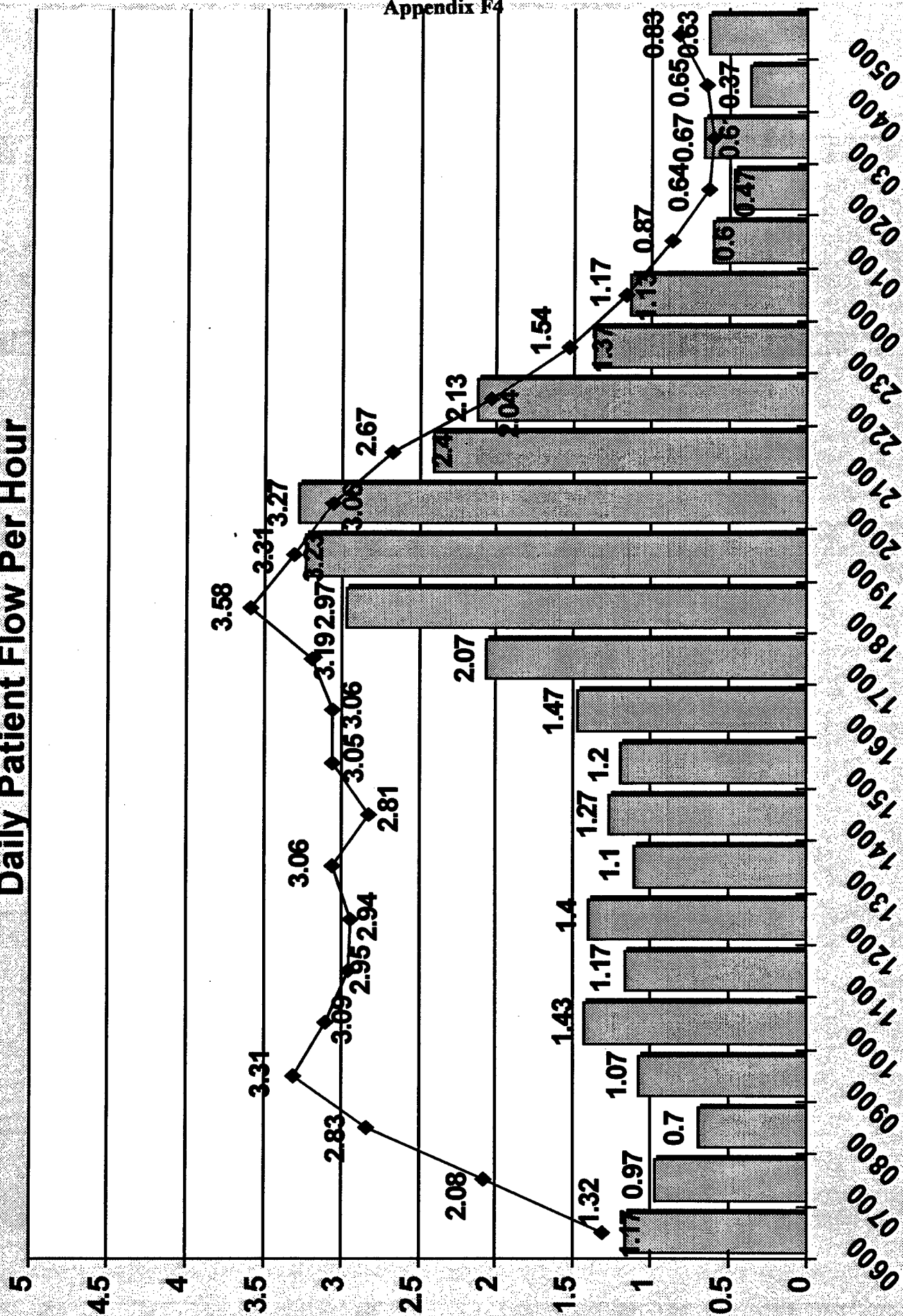
Monthly Patient Flow Per Hour



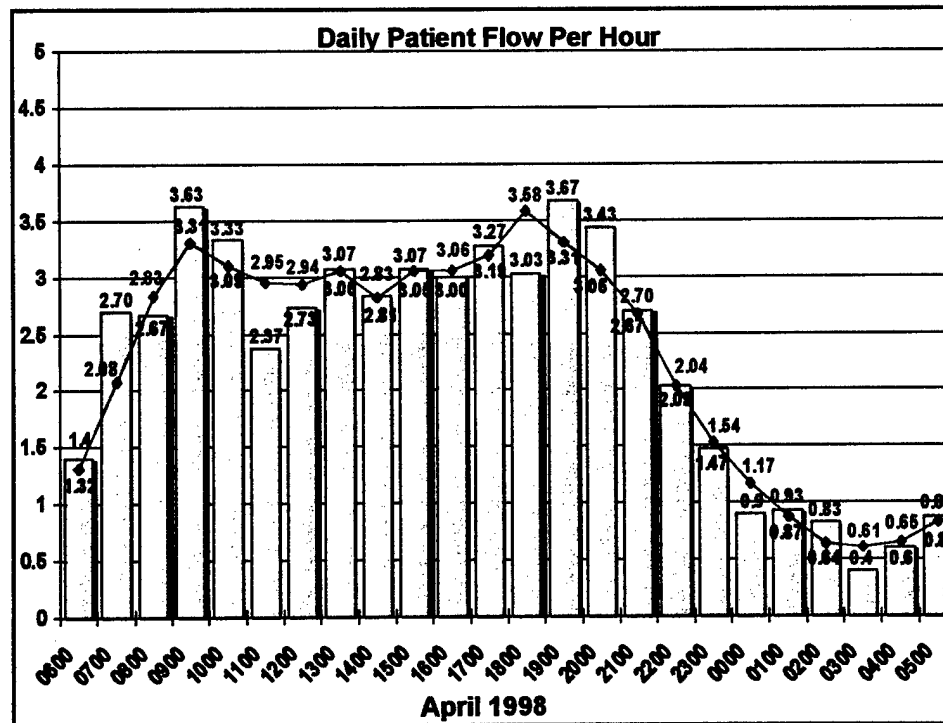
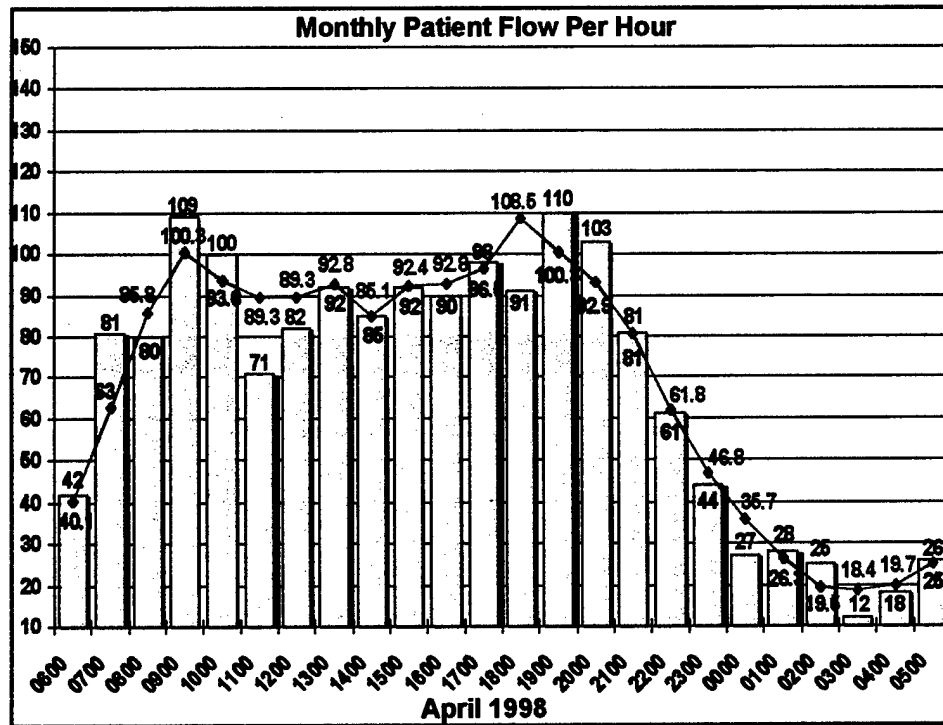
Appendix F4

Daily Patient Flow Per Hour

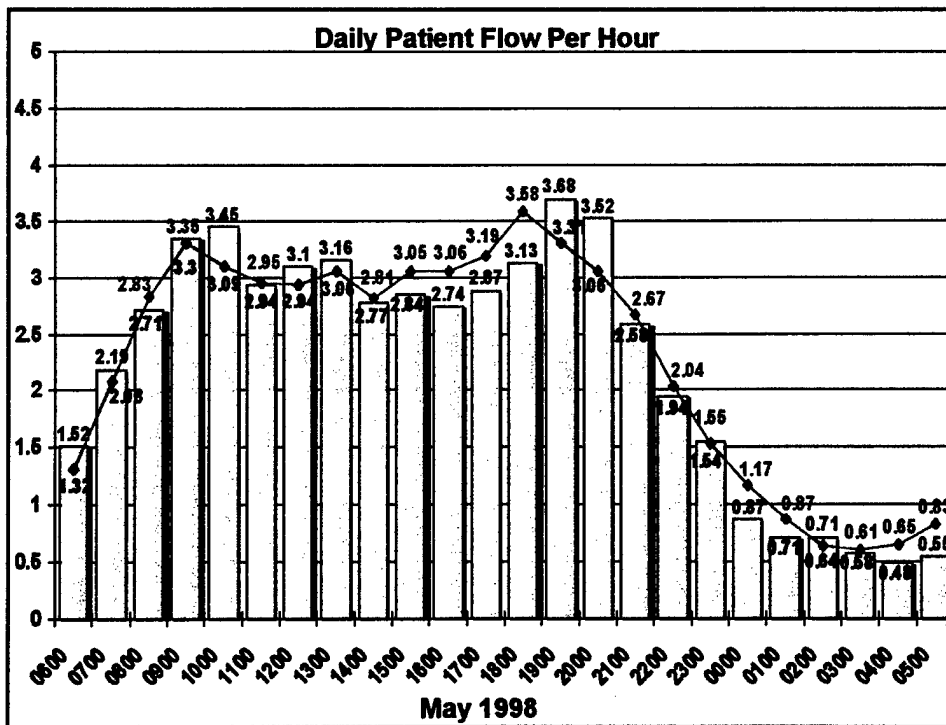
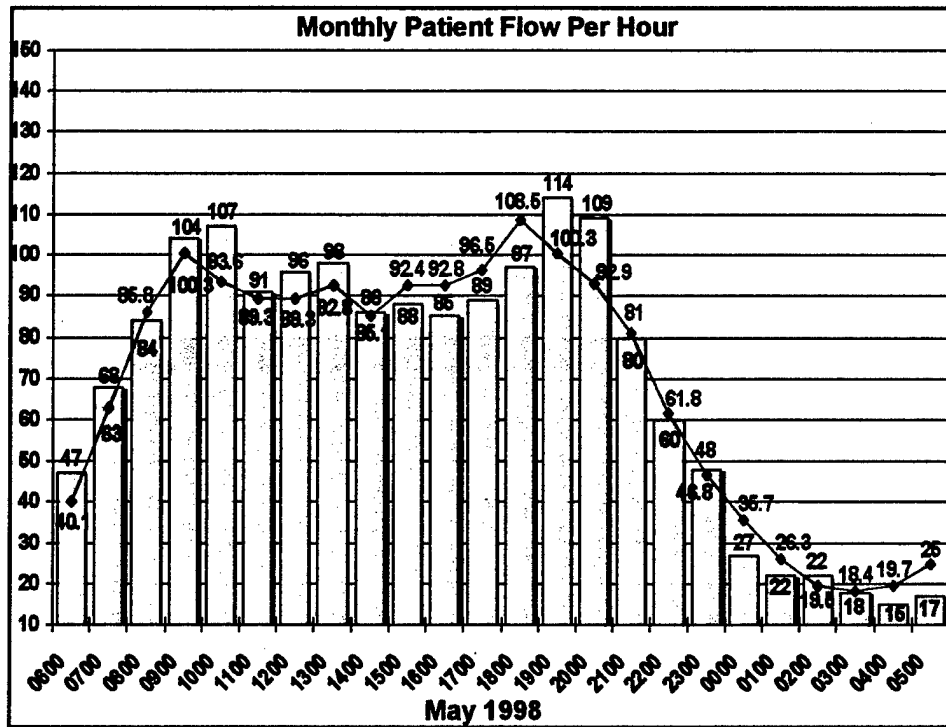
April 1999



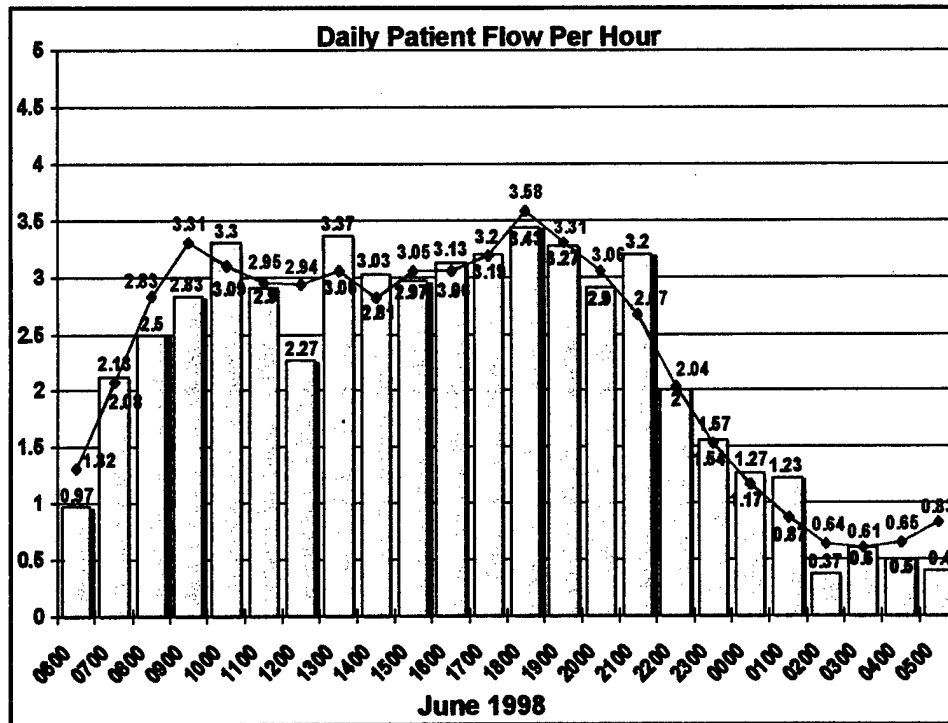
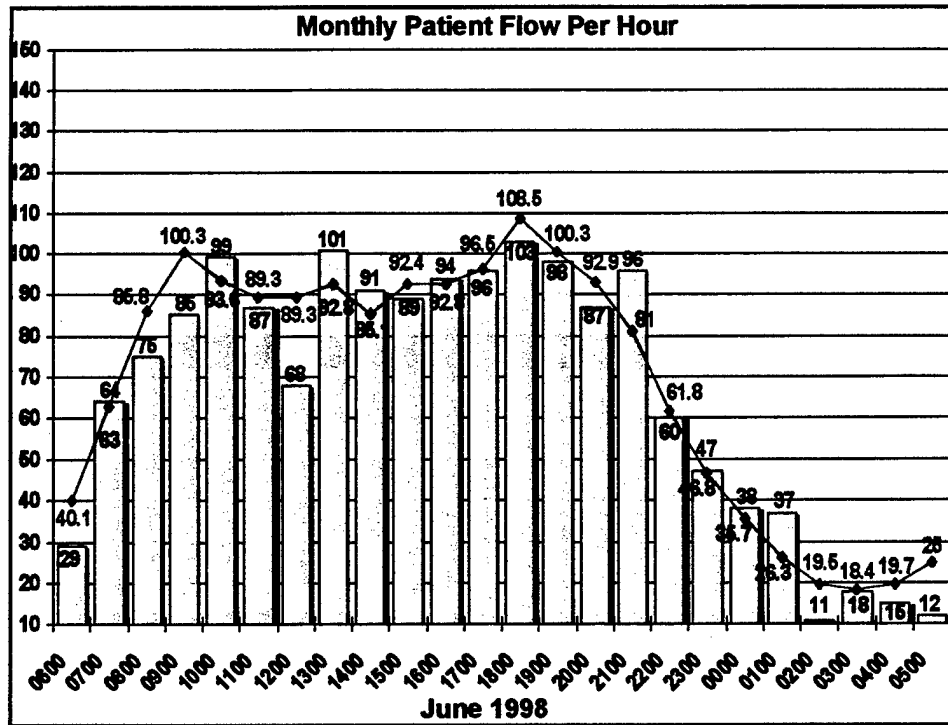
Appendix F5



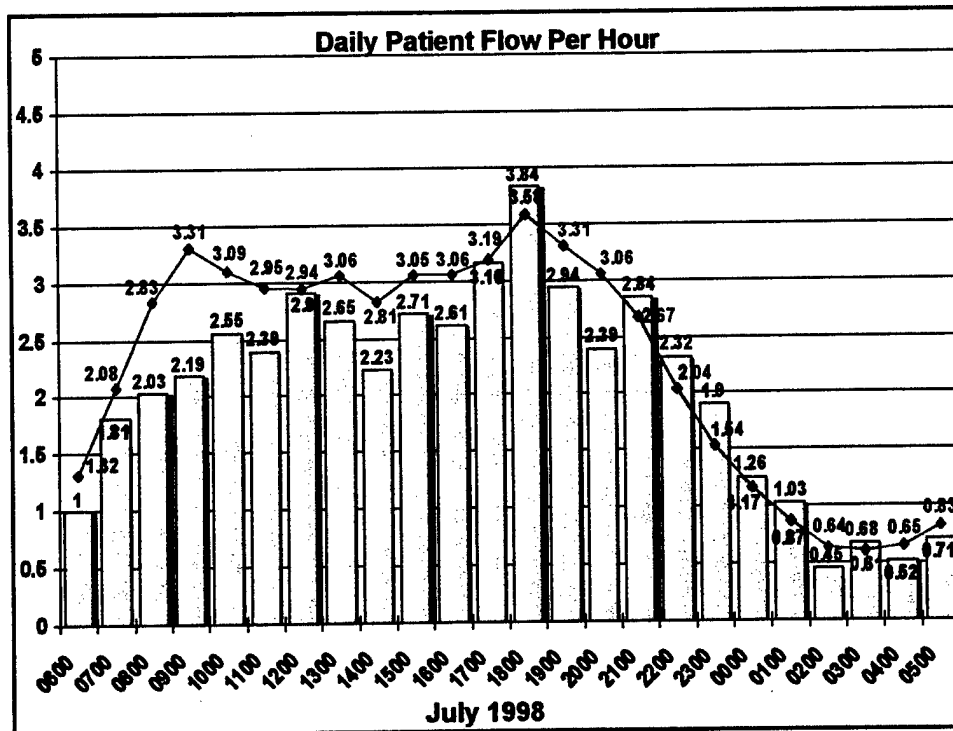
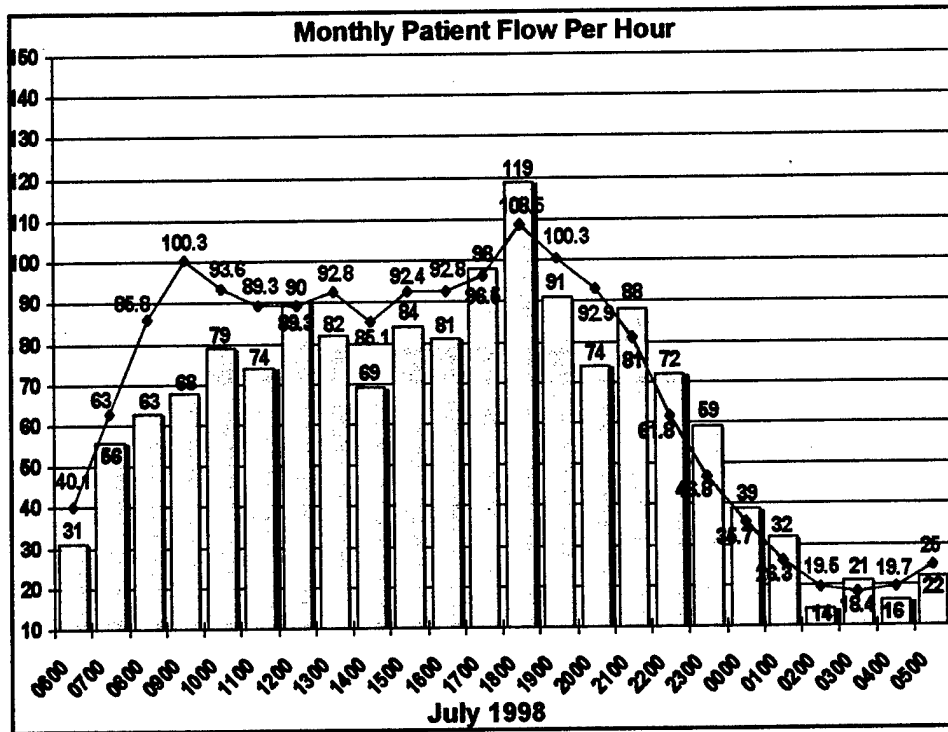
Appendix F6



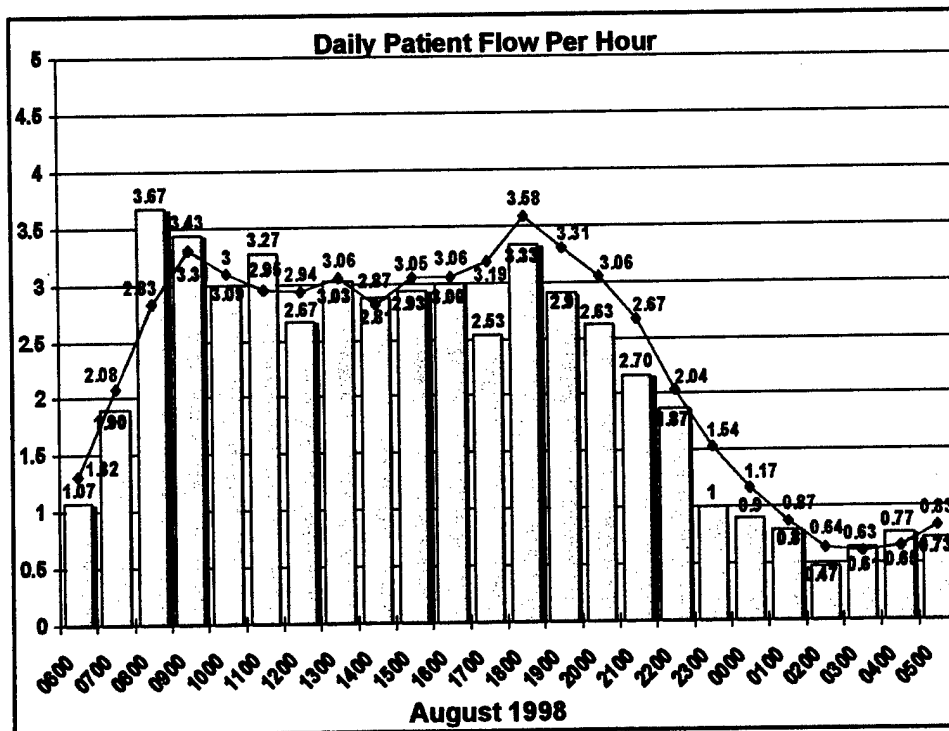
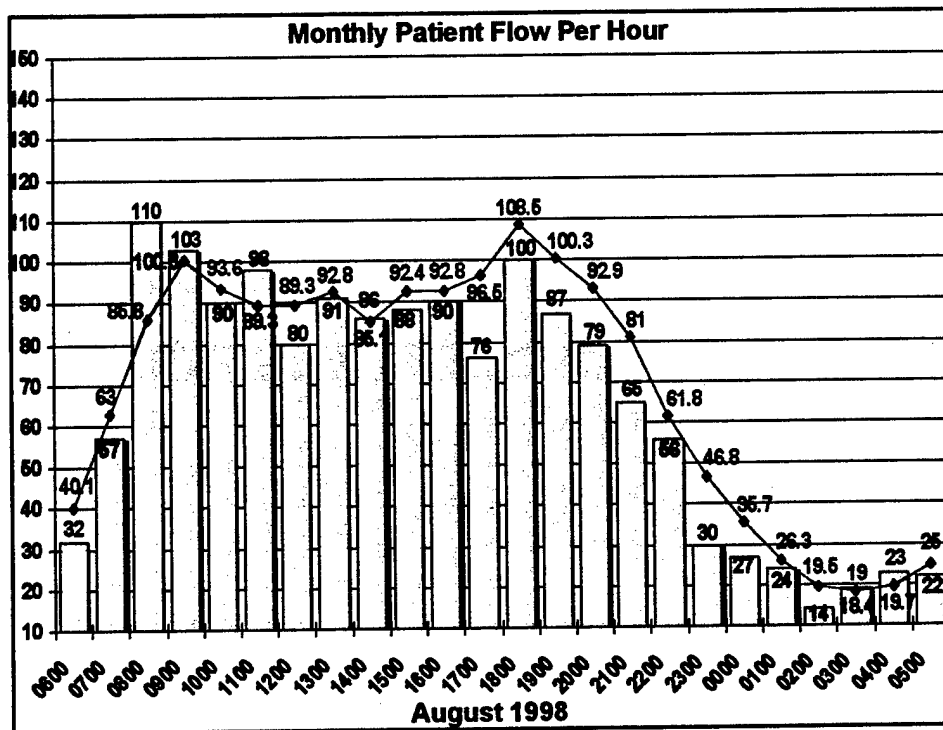
Appendix F7



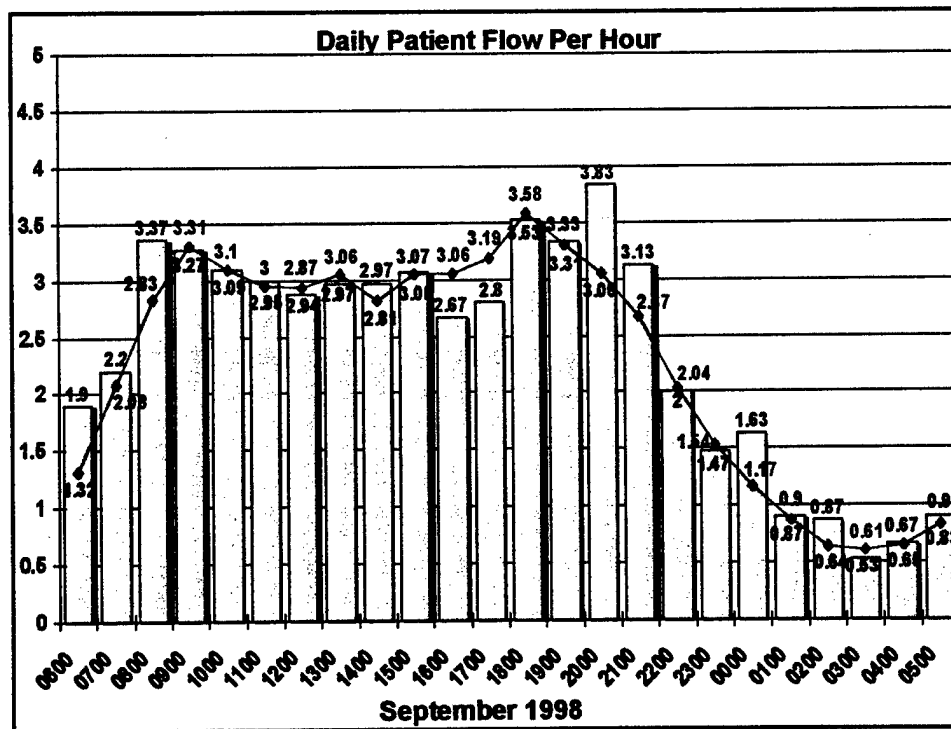
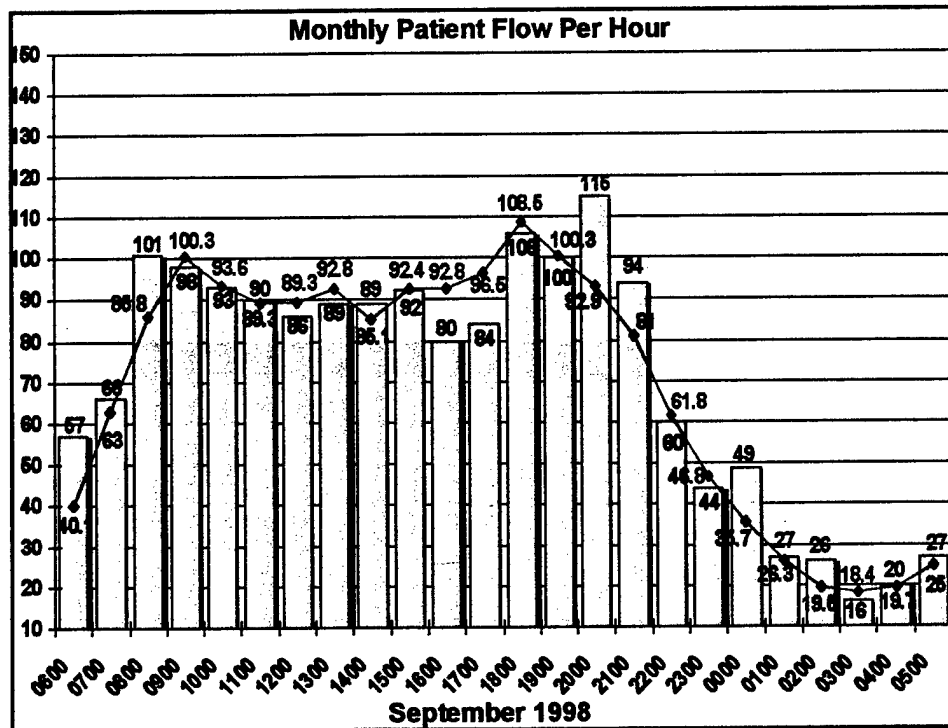
Appendix F8



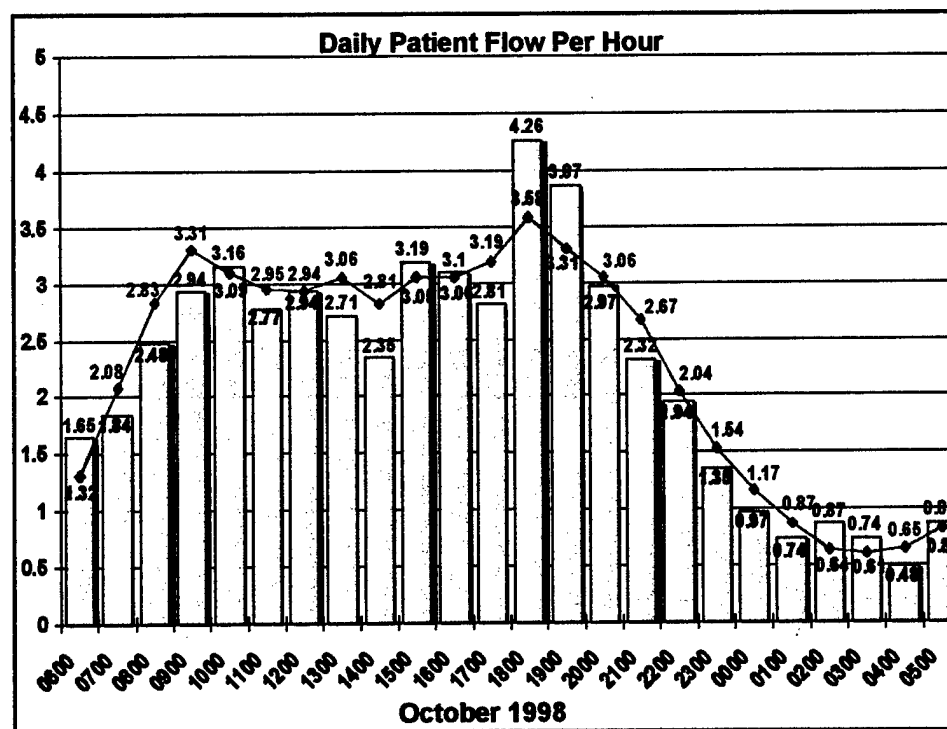
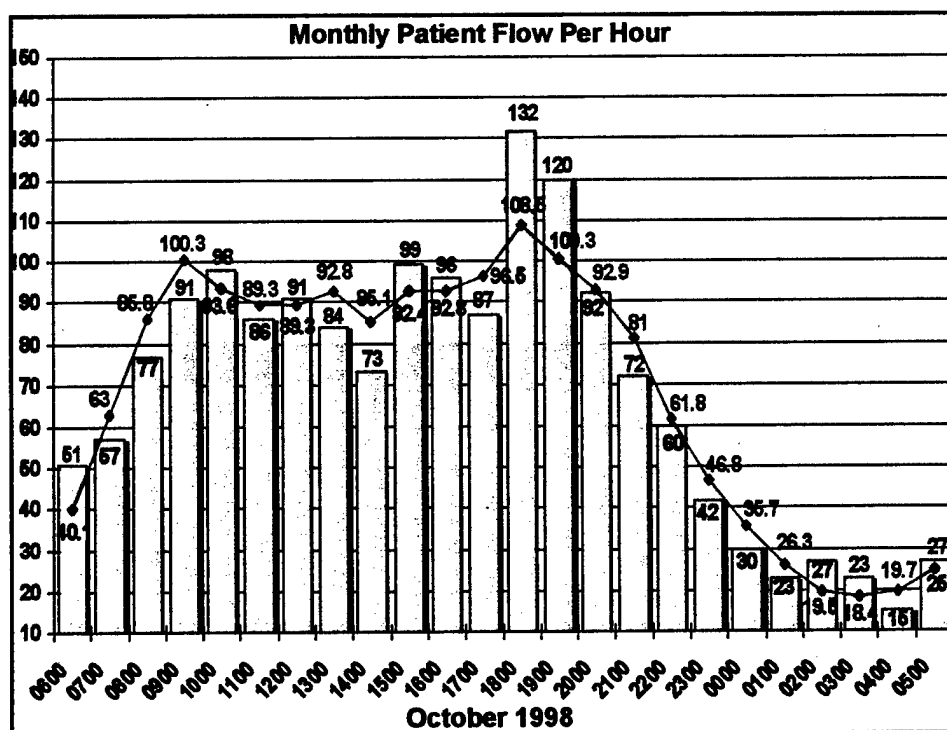
Appendix F9



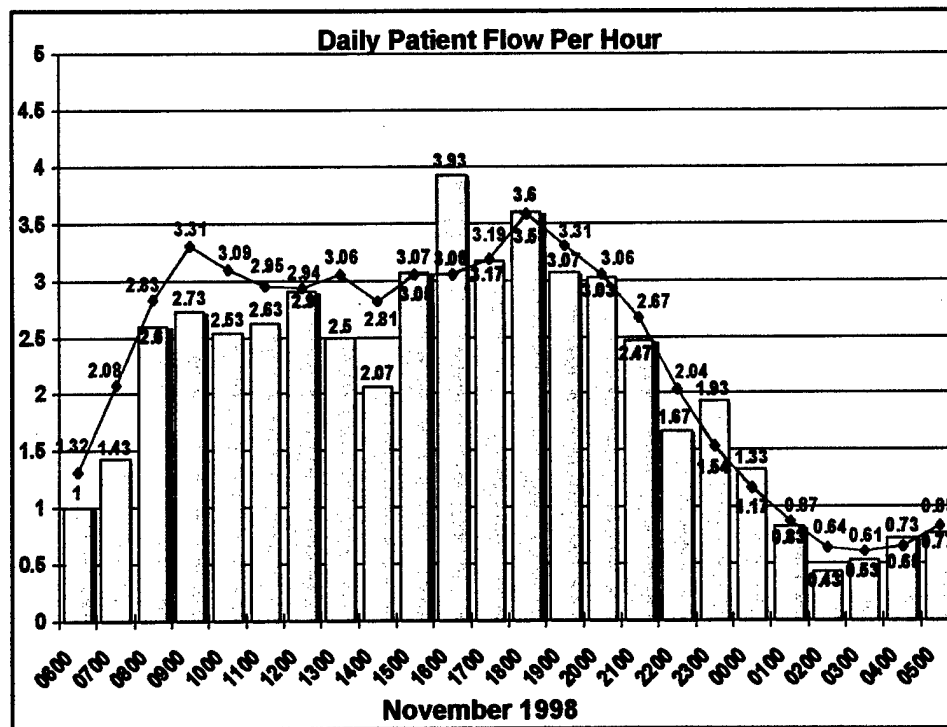
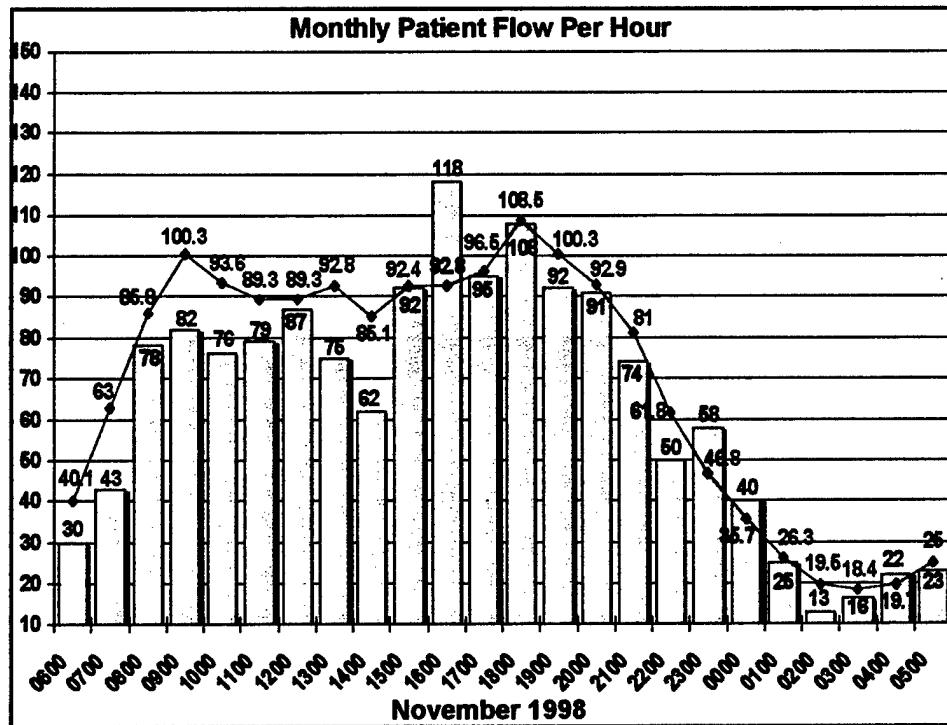
Appendix F10



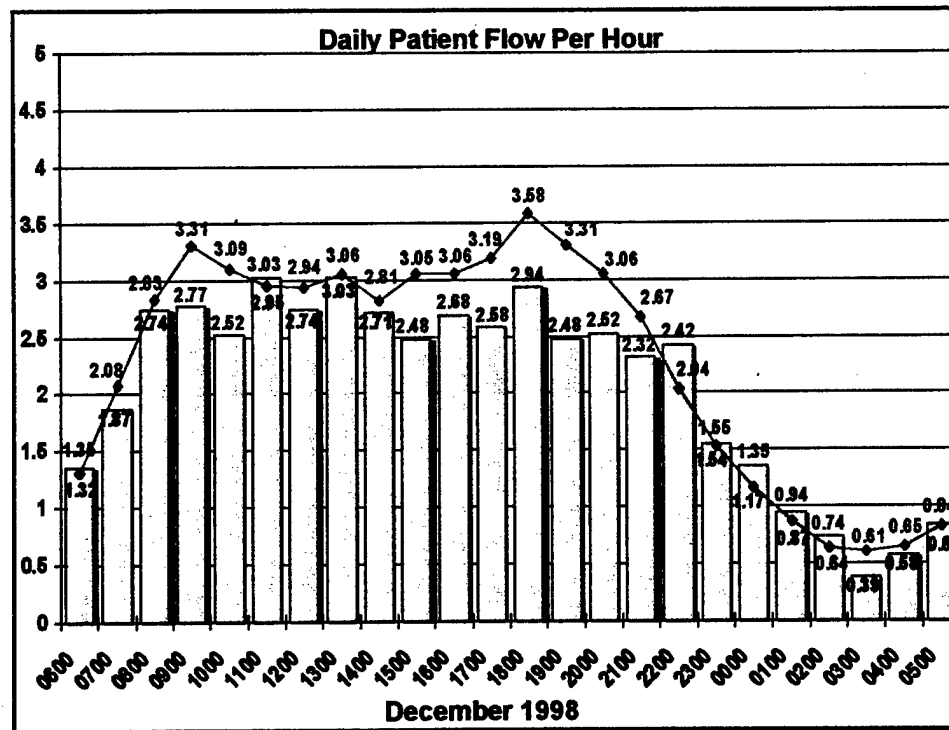
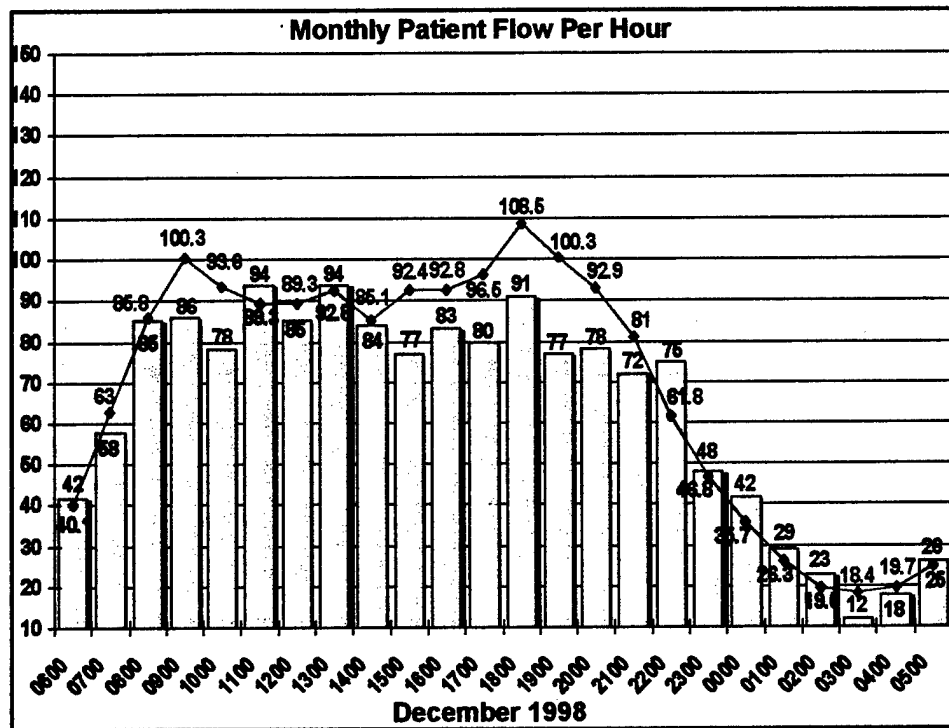
Appendix F11



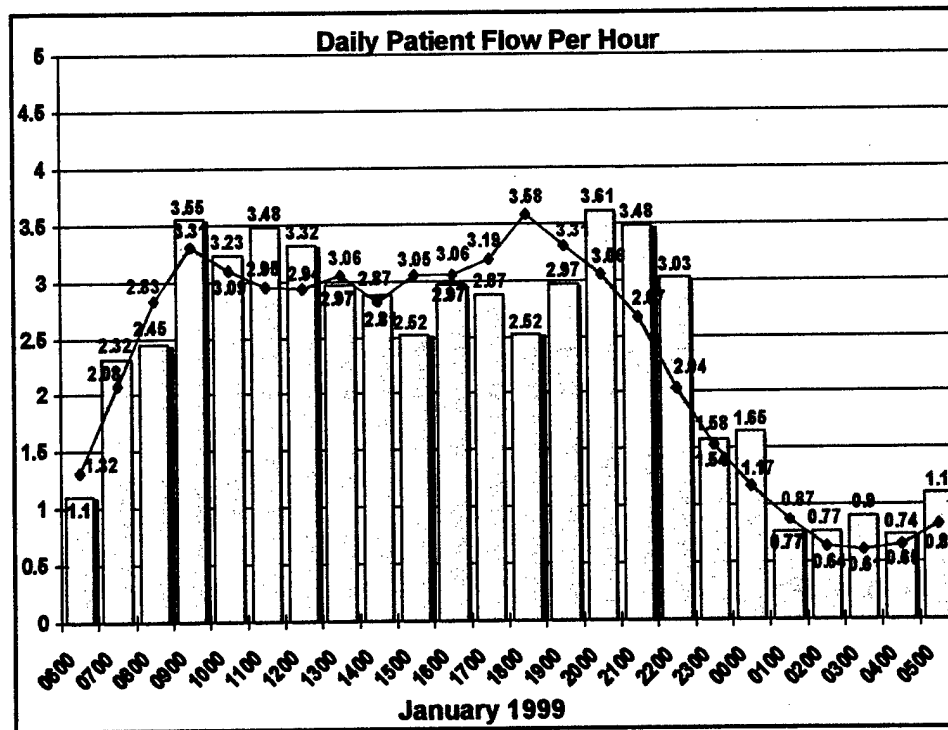
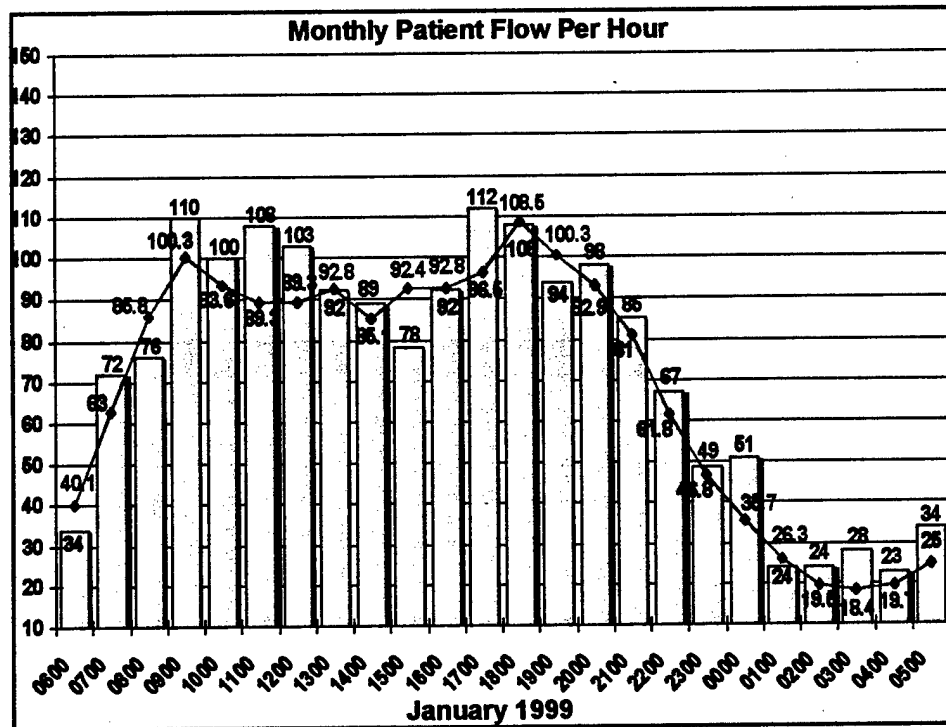
Appendix F12



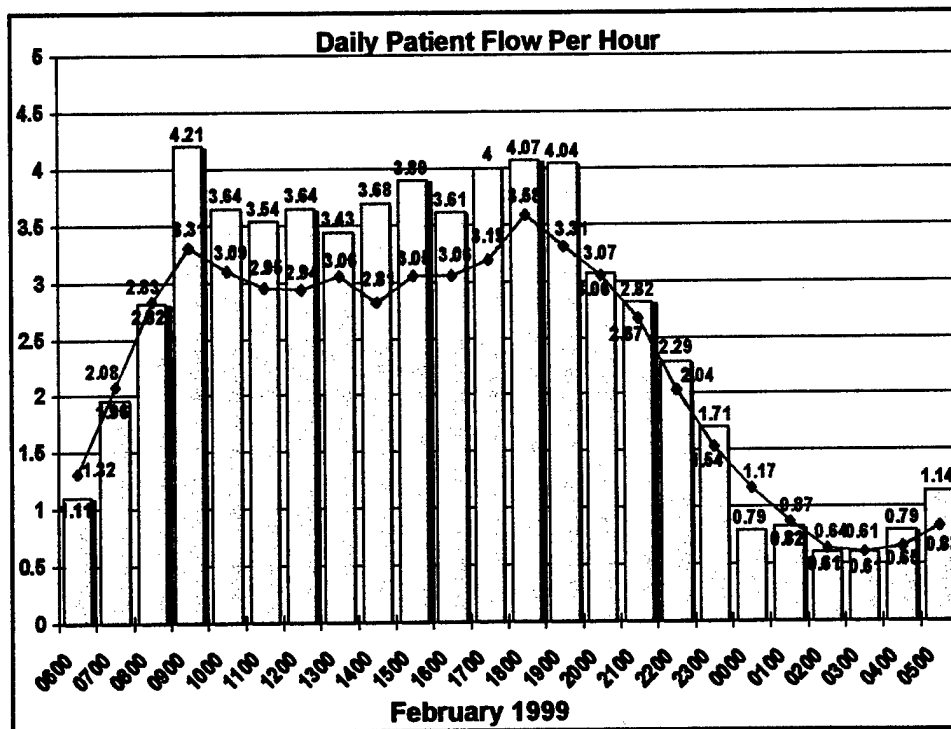
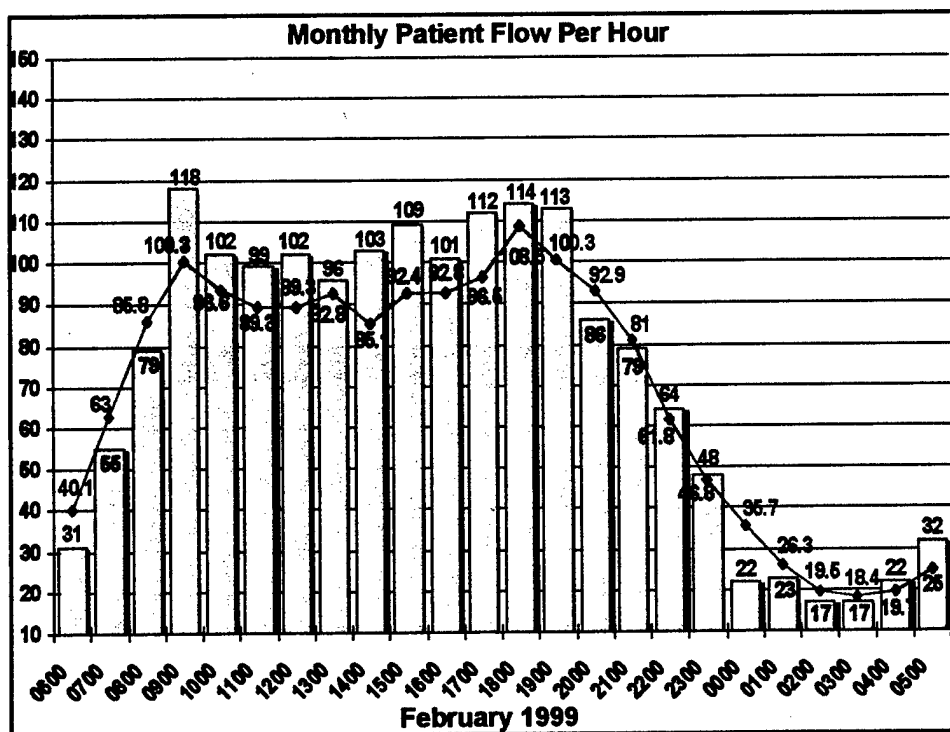
Appendix F13



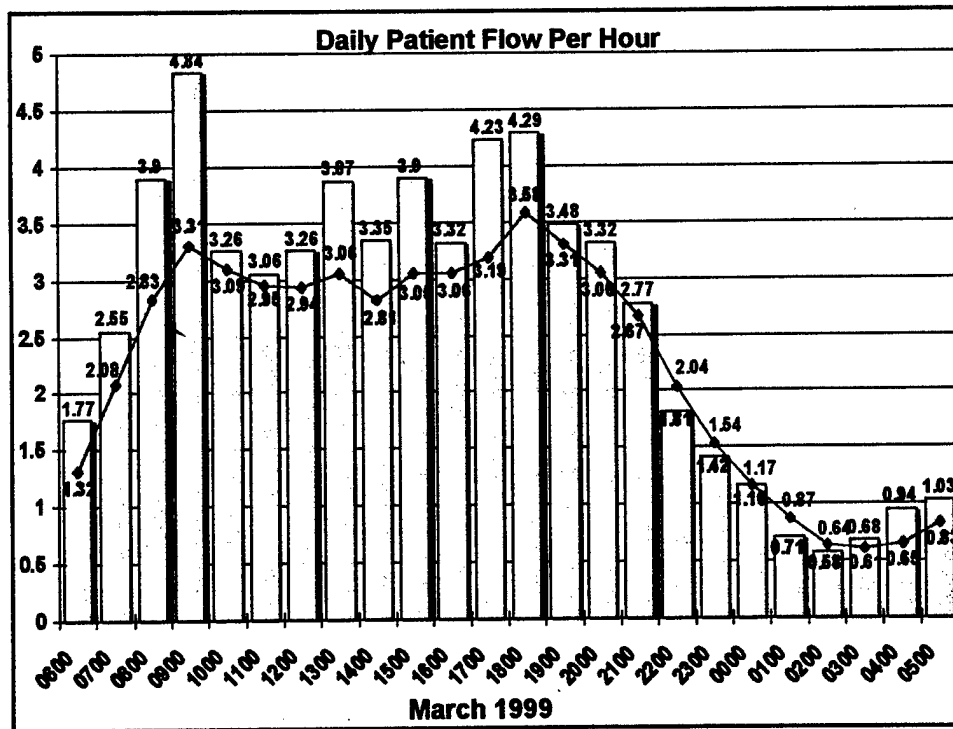
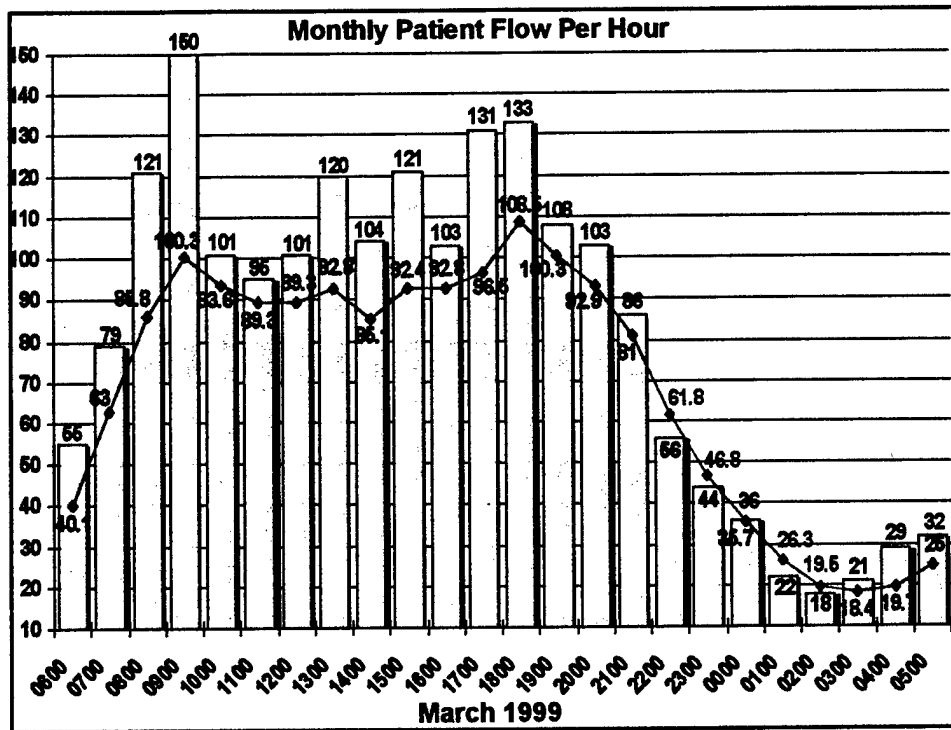
Appendix F14



Appendix F15

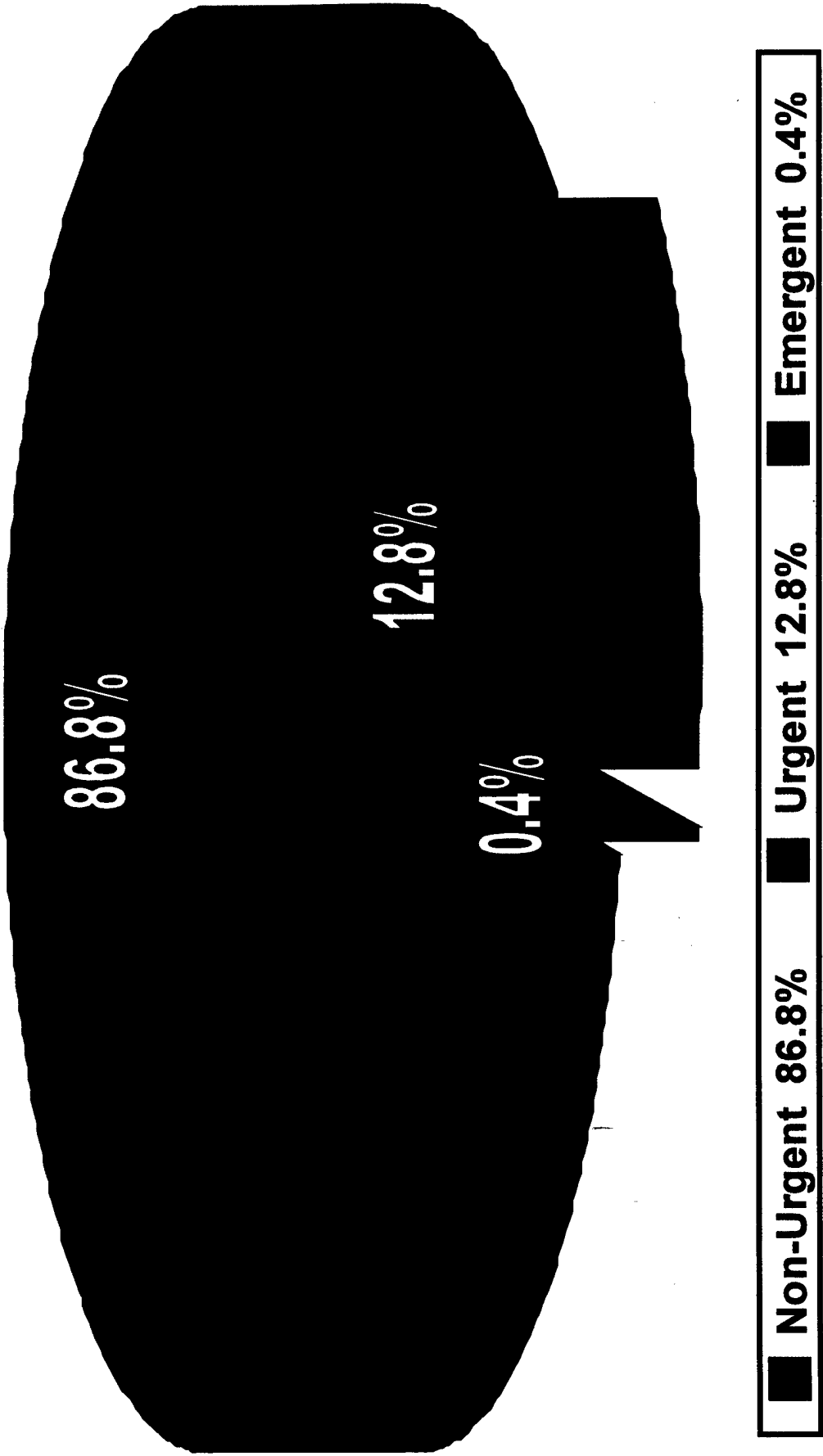


Appendix F16



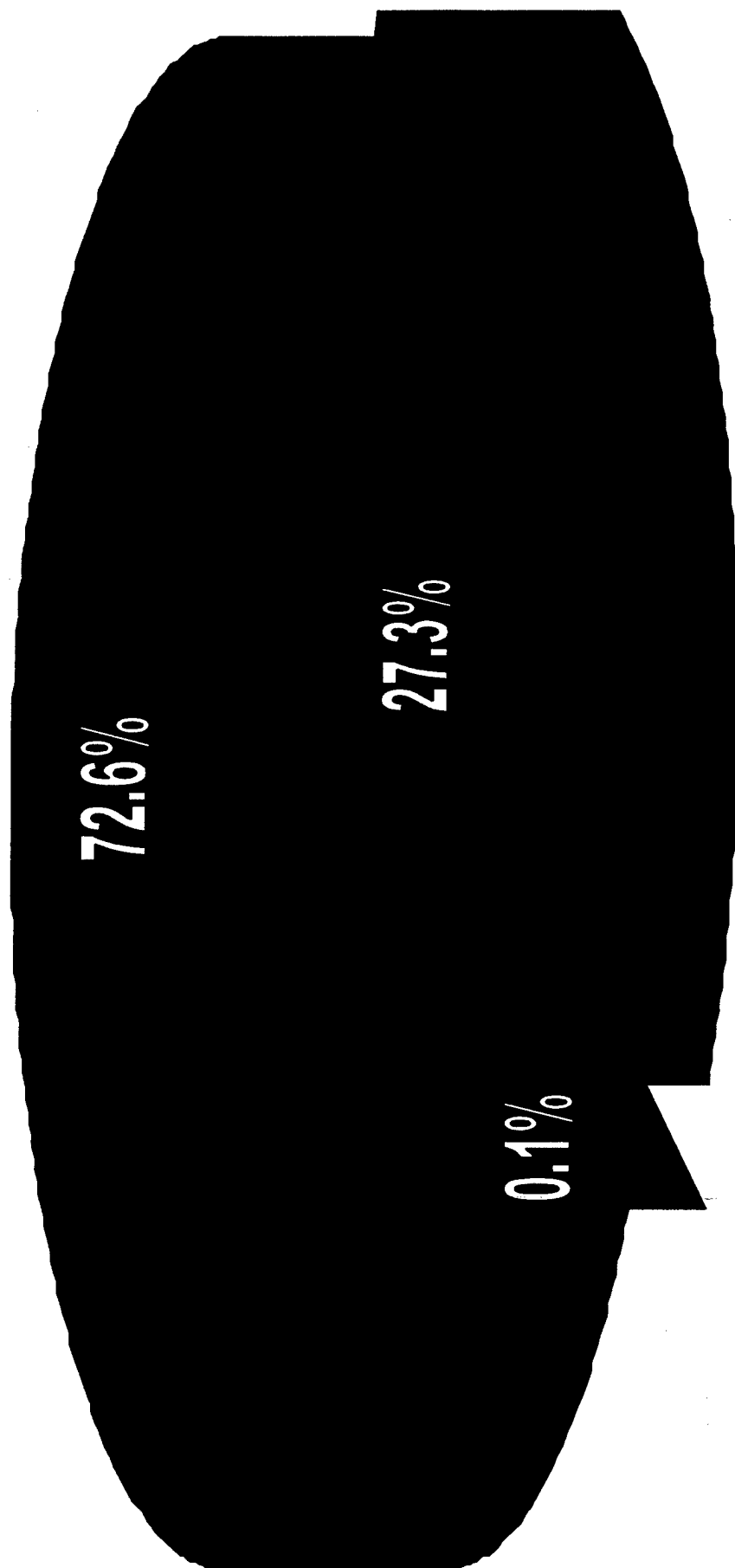
UCC Patient Acuity

April 1998 - March 1999

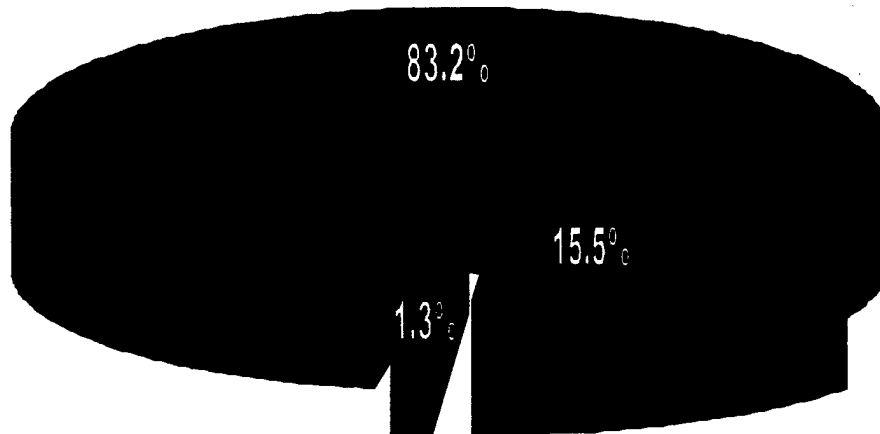


UCC Patient Acuity

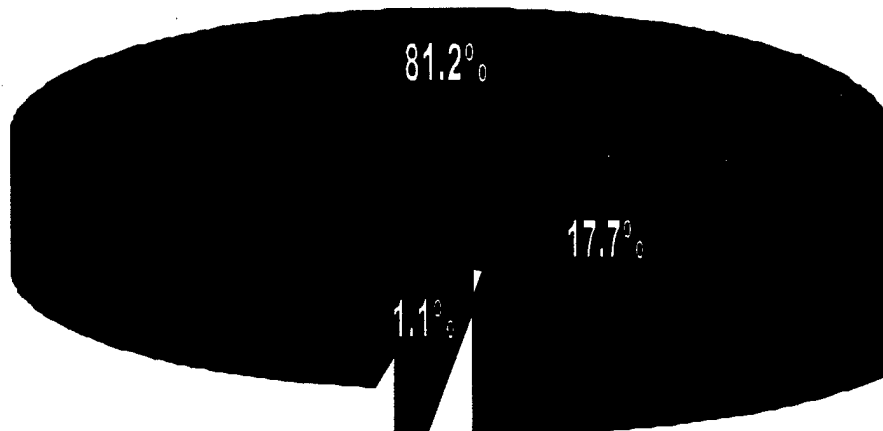
April 1999



Appendix G3

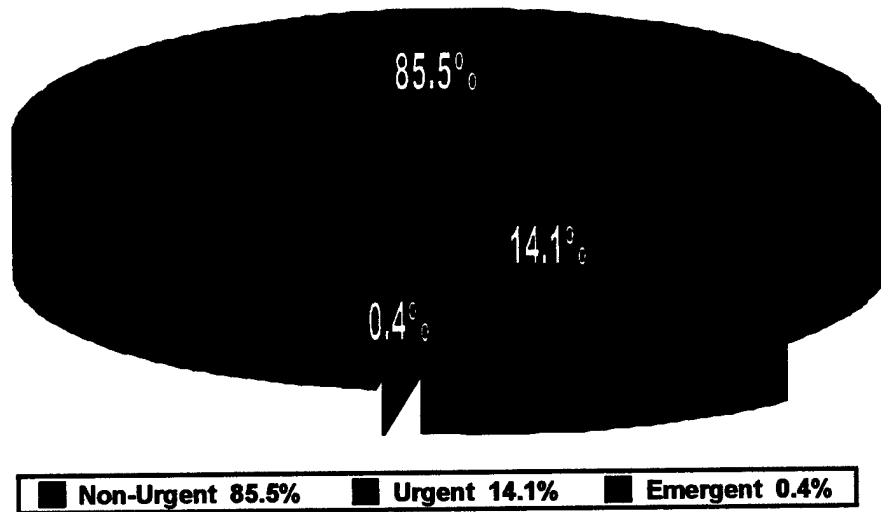
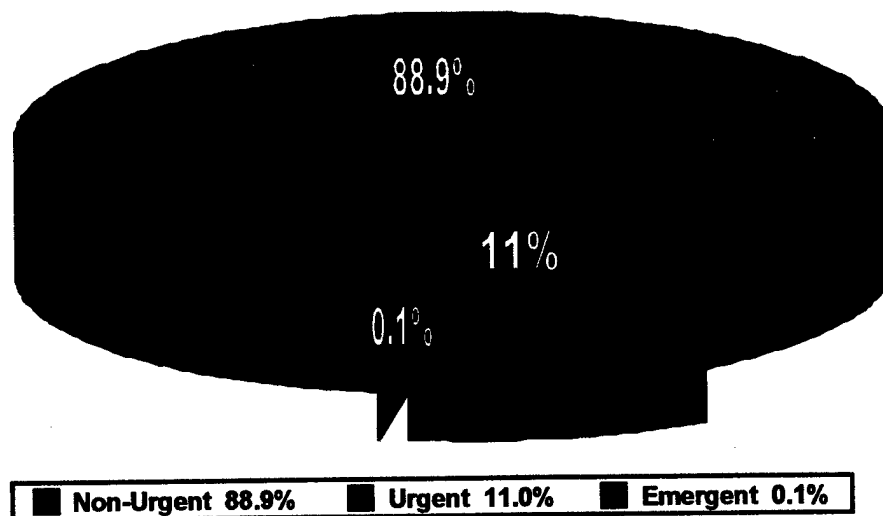
**UCC Patient Acuity
April 1998**

■ Non-Urgent 83.2% ■ Urgent 15.5% ■ Emergent 1.3%

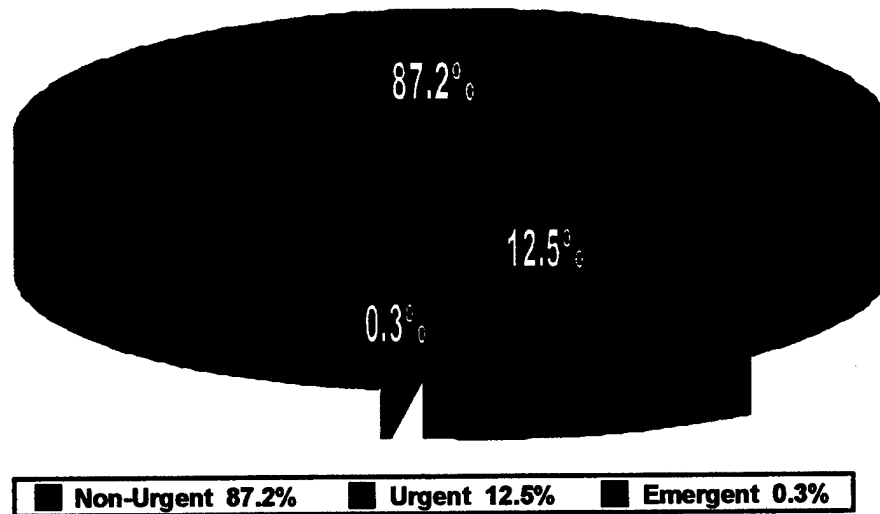
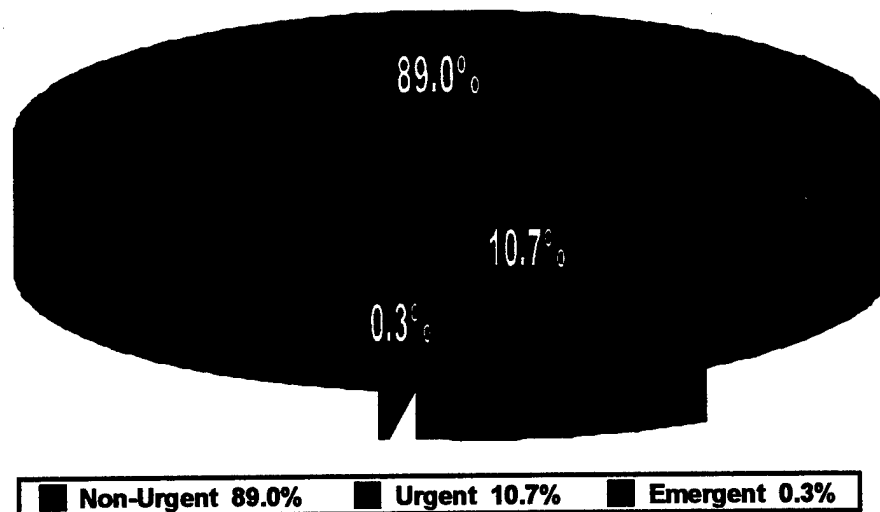
**UCC Patient Acuity
May 1998**

■ Non-Urgent 81.2% ■ Urgent 17.7% ■ Emergent 1.1%

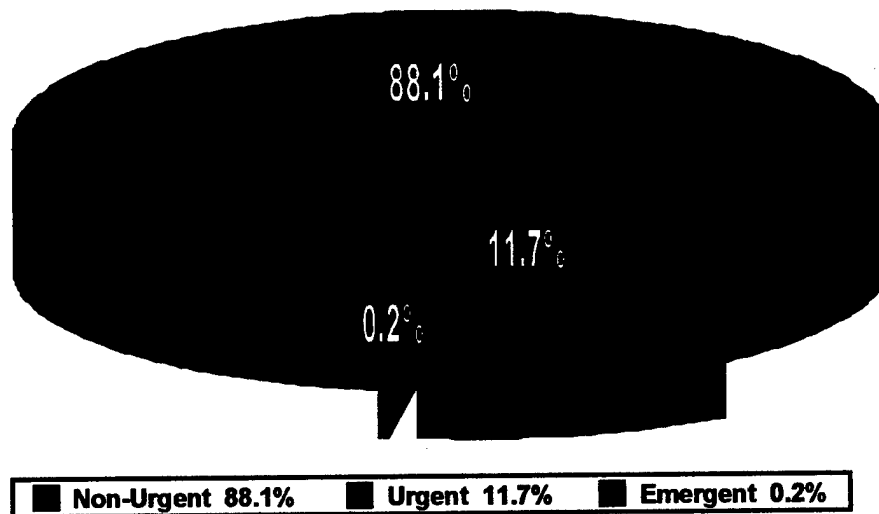
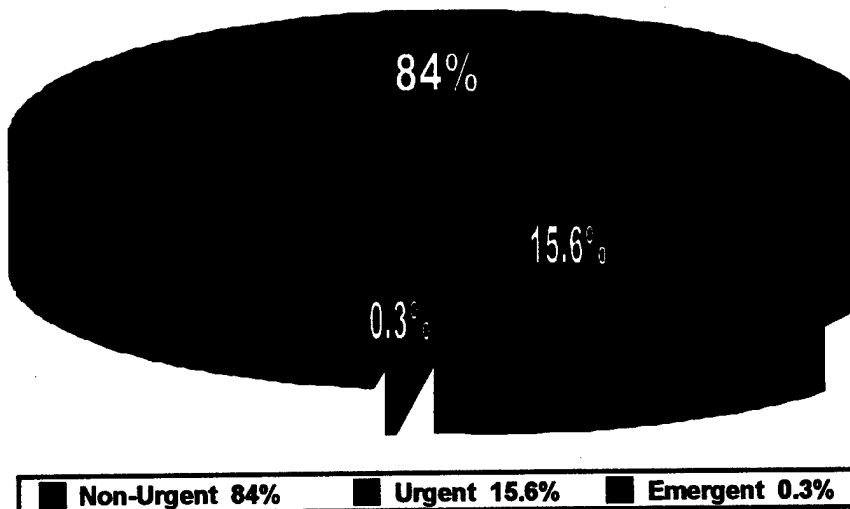
Appendix G4

**UCC Patient Acuity
June 1998****UCC Patient Acuity
July 1998**

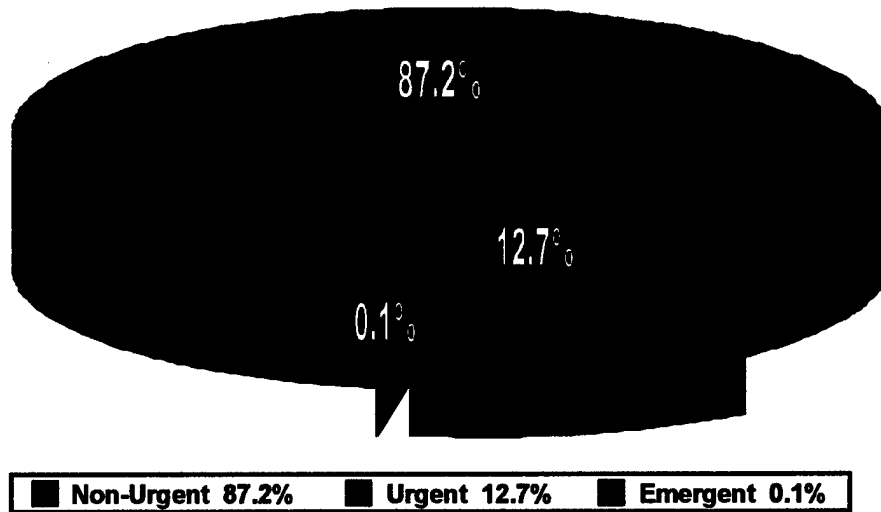
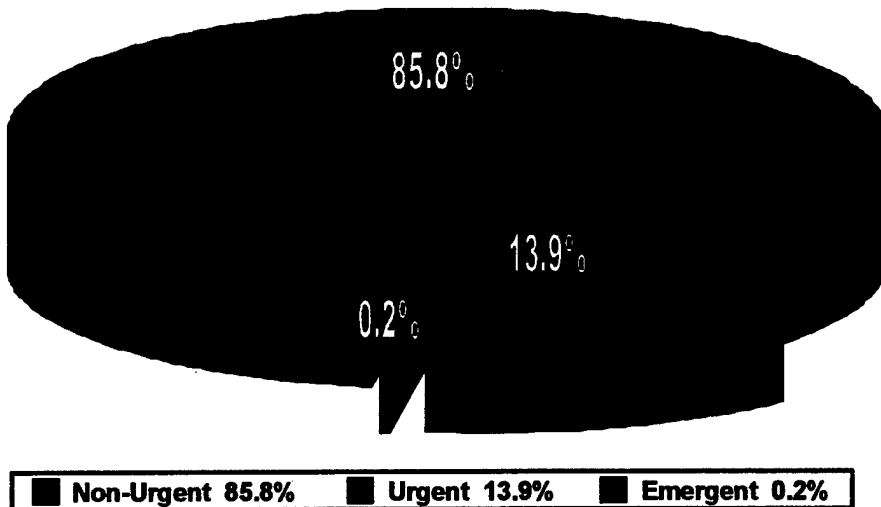
Appendix G5

**UCC Patient Acuity
August 1998****UCC Patient Acuity
September 1998**

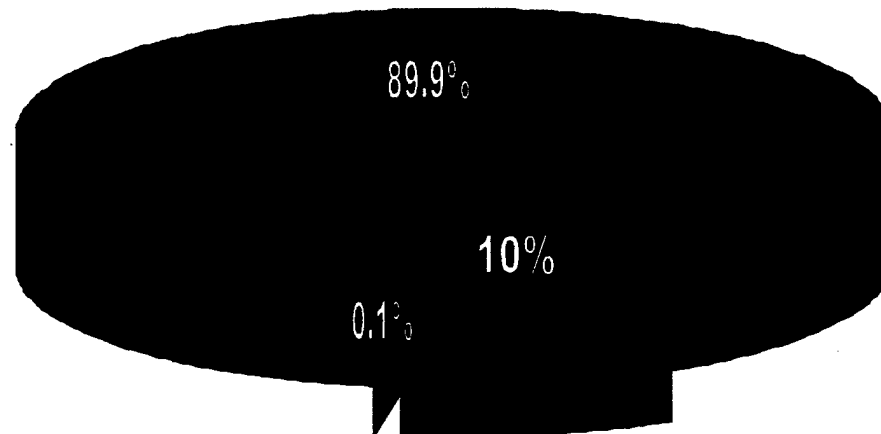
Appendix G6

**UCC Patient Acuity
October 1998****UCC Patient Acuity
November 1998**

Appendix G7

**UCC Patient Acuity
December 1998****UCC Patient Acuity
January 1999**

Appendix G8

**UCC Patient Acuity
February 1999**

■ Non-Urgent 89.9% ■ Urgent 10% ■ Emergent 0.1%

**UCC Patient Acuity
March 1999**

■ Non-Urgent 92.2% ■ Urgent 7.7% ■ Emergent 0.2%

References

Aghababian, R. V. (1995, July 27). Testimony prepared for the House Ways and Means Health Subcommittee and Commerce Health and Environment Subcommittee.

Assistant Secretary of Defense for Health Affairs. (1995, October). Medical Expense Performance Reporting System (MEPRS) – DoD 6010.13-M, Washington, D.C.

Baker, L. C., Baker, L. S. (1994). "Excess Costs of Emergency Department Visits for Non-Urgent Care." Health Affairs, 13(5), 162-171.

Baker, D. W., Stevens, C. D., Brook, R. H. (1995, March). Determinants of Emergency Department Use by Ambulatory Patients at an Urban Public Hospital. Annals of Emergency Medicine, 25, 311-316.

Clark, C. S. (1996, January 5). Emergency Medicine: Is it a vital safety net or a drain on health resources? CQ Researcher, 6(1), 1-24.

Fisher, B. A., Wittlake, W. A. (1998, Jul/Aug). The Emergency Department and Managed Care: A Synergistic Model / Practitioner Response. Journal of Healthcare Management, 43(4) 339-357.

Glavan, K. A., Haynes, M., Jones, D. R., Philput, C. (1998, October). A Military Application of a Medical Self-Care Program. Military Medicine, 163(10), 678-681.

Halfon, N., Newacheck, P. W., Wood, D. L., St. Peter, R. F. (1996, July). Routine Emergency Department Use for Sick Care by Children in the United States. Pediatrics, 98(1), 28-34.

Ivancevich, J. M., Matteson, M. T. (1996). Organizational Behavior and Management (4th ed.). Chicago: The McGraw-Hill Companies Inc.

Nagurney, J. T., Gregg, D. W. (1996, October). Making Good Use of the Emergency Room. Harvard Health Letter p. 1.

SAEM Ethics Committee. (1995). Ethics of Emergency Department Triage: SAEM Position Statement. Academy of Emergency Medicine, (2), 990-995.

Tintinalli, J. E. (1996, June 19). Emergency Medicine. The Journal of the American Medical Association, 275(23), 1804-1805.

TRICARE Support Office. (1997, September). TRICARE Standard Handbook, Aurora, Colorado.

Uva, J. (1996, June 5). Access to Emergency Care-A Need For Change. The Journal of the American Medical Association, 275(21), 1632.

Warren, B. H., Isikoff, S. J. (1993). U. S. General Accounting Office. Report to the Chairman, Subcommittee on Health for Families and the Uninsured, Committee on Finance, U.S. Senate. Emergency Departments Unevenly Affected by Growth and Change in Patient Use. Pub. No. GAO/HRD-93-4, Washington, D.C.: Government Printing Office.

Where to Seek Emergency Care. (1997, April). USA TODAY, 125(2623), p. 8.

Williams, R. M. (1995). "The Costs of Emergency Department Services." Doctoral Dissertation No. 9512232. Ann Arbor: University of Michigan, University Microfilms International Dissertation Services.

Young, G. P., Wagner, M. B., Kellerman, A. L., Ellis, J., Bouley, D. (1996, April 14). Ambulatory Visits to Hospital Emergency Departments: Patterns and Reasons for Use. Journal of the American Medical Association, 276(6), 460-465.